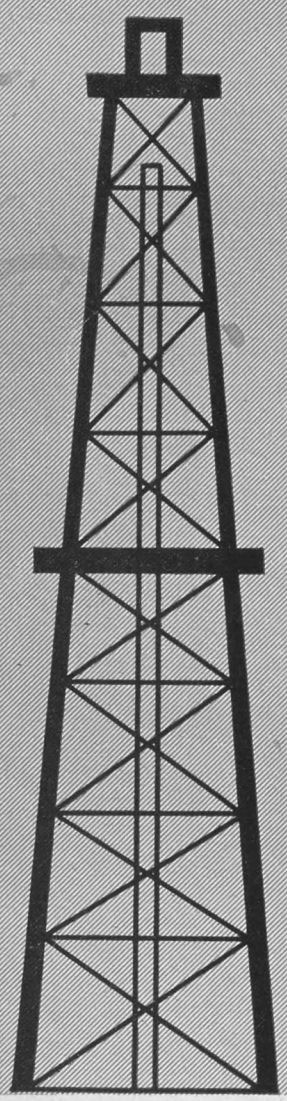

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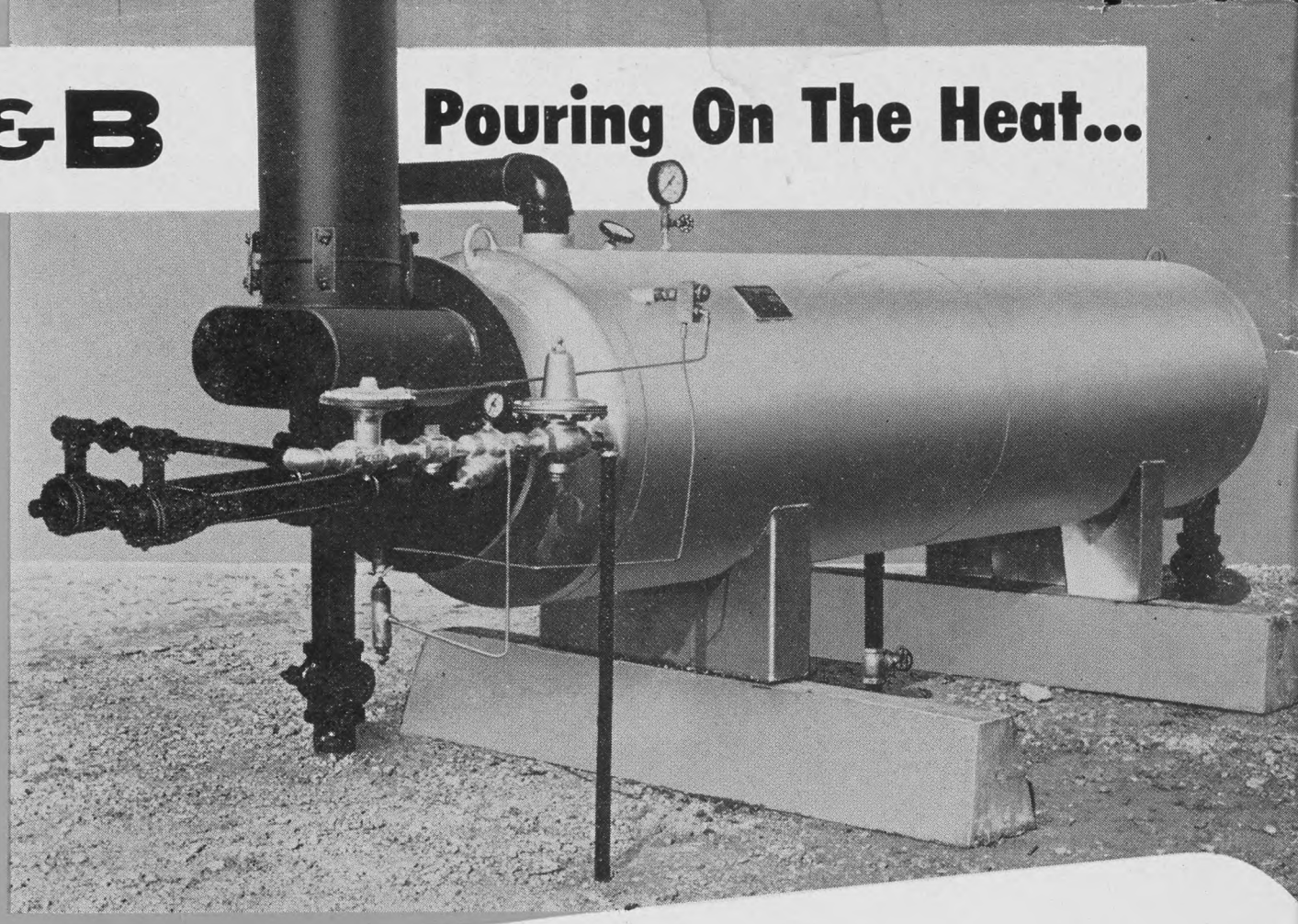
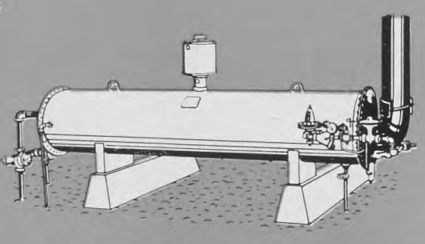
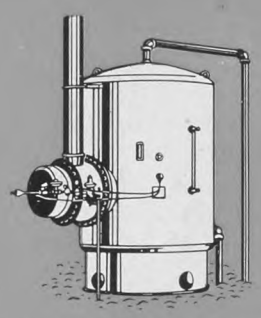


The BS&B Series 70 Internal Firebox Heater is a compact, direct-fired heater designed around the BS&B Series 70 Immersion Firebox. This Firebox has been used in many applications ranging from direct-fired heating elements installed in storage tanks, operating at normal temperatures of 100° F., to indirect heaters where high temperature heat transfer media are maintained as high as 800° F.



The BS&B Series 70 Model 2 Indirect Heater is an immersed coil liquid bath heater. Designed to heat gases or liquids over wide range of pressures without resorting to high pressure shell or special design for each heating problem. Model 2 combines the advantages of a tubular heat exchanger with efficiency of a built-in furnace.



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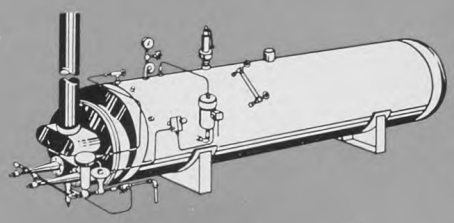

The BS&B Steam Generator, Model 70, is a low-pressure steam boiler designed to meet requirements of ASME Low-Pressure Heating Boiler Code for use in application of 15 lbs. maximum steam pressure or 40 lbs. hot water. In conjunction with cast-iron closed coil systems, provides an effective method of heating highly corrosive crude oils.

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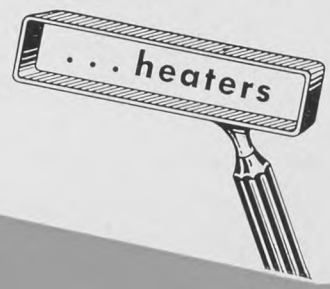

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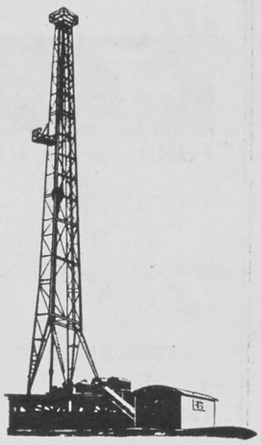

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Readers are cordially invited to submit articles pertaining to the oil industry in the North and Western Provinces.

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Out of the Past . . .

Taken from the files of The Edmonton Journal August 16, 1920.

NATURAL GAS NEWS 1920—

Natural gas has been struck in the well being bored by the Provincial Department of Public Works on the grounds of the asylum at Ponoka.

Drilling operations have been going on there for some time past and what looks like a real strike was made at the end of the week after reaching a depth of 2,590 feet.

A pressure of 625 pounds was registered at the well yesterday and the prospects for a good flow were considered hopeful. The hole has been capped and the work of connecting up with the power house of the asylum plant is now under way.

This is not the first time gas has been found at Ponoka but previous strikes have proved to be only pockets that were soon exhausted. For this reason officials of the Public Works Department are displaying considerable caution in what they say about the present find and refuse to pronounce upon its importance until the gas has been really tested out.

The pressure is higher now than on previous occasions however and the hole appears to be entirely dry. Both these conditions are looked upon as favorable to the strike proving out satisfactorily, and although tests will be made to see how the supply holds out.

The gas will be used as fuel supply for the power plant at the asylum.

* * *

NATURAL GAS NEWS 34 YEARS LATER:

The importance of gas has risen to great heights since the 1920's and 1954 looks like the year of great development of natural gas in Canada.

Already plans are under way for piping of natural gas to eastern Canada and there are also plans for supplying gas to the west coast area.

Trans-Canada Pipe Line Ltd. are planning to build a 2,240-mile main line from Alberta to eastern Canada. A 36-inch section from Alberta to Winnipeg will be the largest line ever built in North America.

The cost of this line is estimated to be $300,000,000, exclusive of feeder lines.

West Coast Transmission Co. Ltd. is prepared to supply British Columbia, Washington, Oregon, and Idaho with an initial 200,000,000 cubic feet of gas per day once given the green light on its pipeline proposal. The line would be designed for a maximum capacity of 400,000,000 cubic feet per day.

The Alberta government has committed to Trans-Canada a total of 4,350,000,000,000 cubic feet of gas to be taken over a period of 27 years.

One estimate on Alberta's known reserves of natural gas is placed at 15,999,000,000,000 cubic feet. Once gas export is permitted we can expect a greater search for natural gas reserves in Canada as many fields known as potential fields have had to be by-passed through lack of a market.

GAS NEWS AS WE GO TO PRESS

The Federal Power Commission in a decision handed down on June 18, authorized Pacific Northwest Pipeline Corporation, to serve the United State's Pacific Northwest with a $160 million gas pipe line from the San Juan basin of New Mexico.

The application of Westcoast Transmission Co. Inc. was refused because the gas reserves would be under Canadian jurisdiction. Westcoast Transmission had proposed to supply Vancouver and the Pacific Northwest from the expanding fields of the Peace River in Canada.

The F.P.C. decision was a keen blow to the people of Alberta and British Columbia. The proven gas reserves in the San Juan basin will not be sufficient to handle the needs of the entire Pacific Northwest whereas the Peace River gas reserves could supply this area and all its future needs.

Mr. G. L. McMahon, president of Pacific Petroleums Ltd., has stated that his company will continue in its exploration and development programs of the natural gas areas of the Peace River.

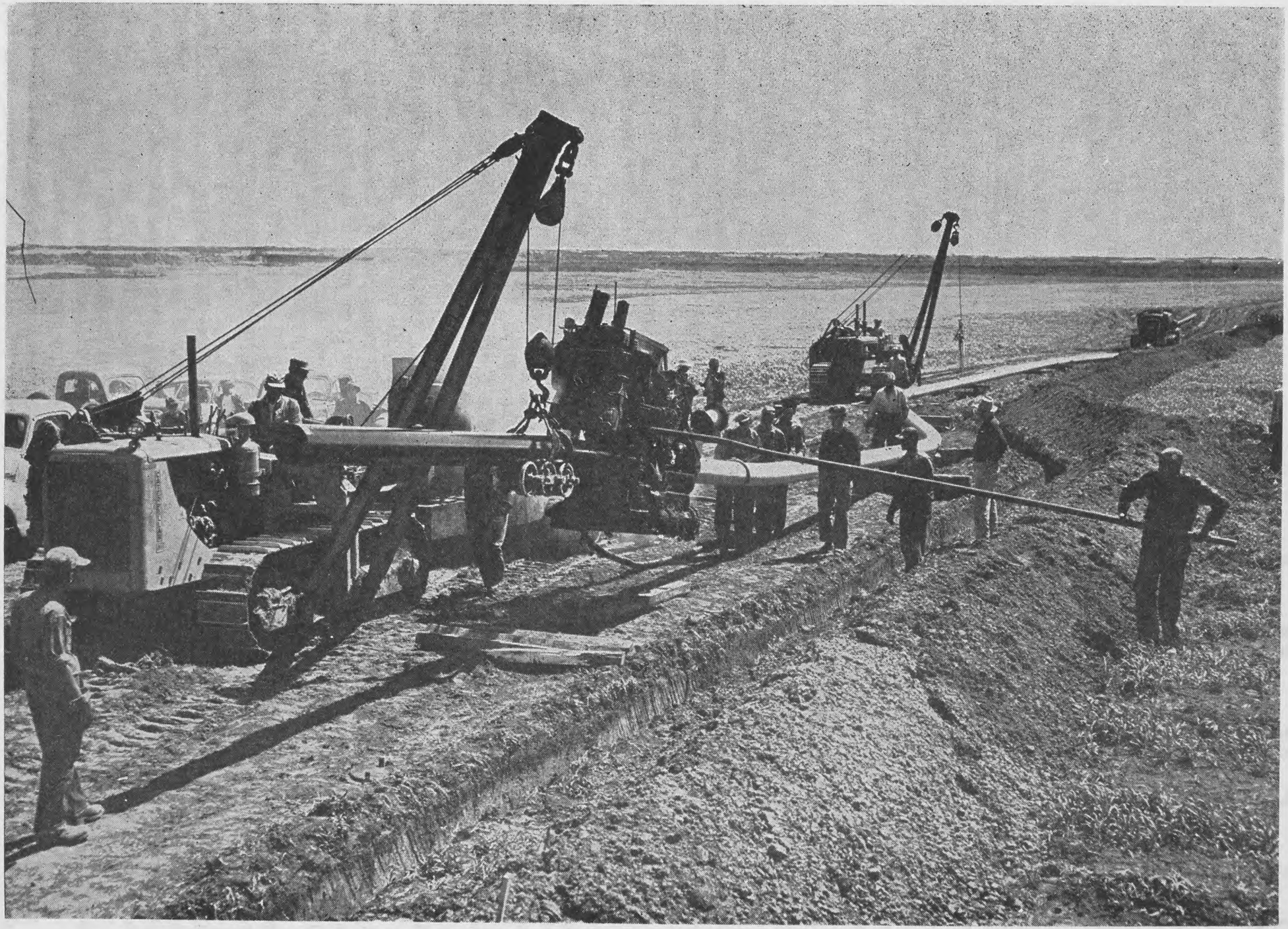
Questions that are being circulated at this time following the F.P.C. decision are:

1. Will Westcoast Transmission Co. Inc. go ahead and build a line to serve Vancouver and B.C.?

2. Did the F.P.C. really believe that Pacific Northwest will be able to finance and actually build a line twice as long, backed by inadequate gas reserves? If not what then?

3. Will Pacific Northwest Pipeline Corp. and Westcoast Transmission Co. Inc. build a joint pipe line from the Peace River area?

The above questions should be answered in our next publication unless someone kicks that political football (GAS) out of the park.



Last Joint of 10" Line for Saskatchewan Power at Saskatoon, Saskatchewan

Courtesy Banister Construction Ltd.

ORIFICE METERS

By D. C. WILEY, American Meter Company, Incorporated

Satisfactory measurement by orifice meter involves three major factors:

1. Proper design and installation of the primary measuring element and guage lines.
2. The use of the proper factors and coefficients in calculating flow.
3. Proper calibration and maintenance of the recording and measuring instrument.

Proper design and installation of the primary measuring element and guage lines should start with a study of the AGA Report No. 2. It should always be kept in mind that the basic orifice flow factors used in orifice meter calculation are emperical—i.e., they result from tests made under definite conditions which are specified in the AGA report. Unless the conditions of the AGA tests are duplicated in the field, the flow measurement computed from AGA coefficients will not be correct. It is obvious that a three-inch orifice in a pipe will not have the same coefficient as a two-inch orifice. But it is equally true, although not so obvious, that a rounded edge on an orifice or other distortion of the flow pattern will cause the calculation of an incorrect rate of flow.

The measuring and recording instrument receives two pressures, the pressure upstream and the pressure downstream from the orifice. It draws a record of one of these pressures, usually the downstream pressure, to be used in the flow calculation as the static pressure; and compares the two pressures to draw a record of the differential pressure across the orifice. Of course, if one of the guage lines is leaking, the differential pressure as shown will not be that which actually exists across the orifice. Similarly, liquid trapped in the guage lines causes an erroneous reading.

Perhaps a clearer distinction should be made between an orifice meter measuring system and an orifice meter, the term usually applied to the measuring and recording instrument. To give accurate measurement, the orifice meter measuring system requires that a multitude of conditions be satisfied—such as straight, smooth meter runs of prescribed length; absence of turbulence in the gas stream; orifice plates of prescribed flatness and sharpness of edge; specific points of pressure measurement; knowledge of the physical condition of the gas, such as temperature, specific gravity, viscosity, supercompressibility, etc. All these conditions must be precisely satisfied in order that a coefficient may be selected which will permit the accurate determination of the rate of flow of gas.

The orifice meter considered only as the measuring instrument has a very simple though extremely important function to perform. It draws lines on a clock-driven chart which represent the static pressure and differential pressure as it sees, or rather senses, these pressures. A more exact statement would be that the orifice meter instrument records a pressure at the Bourdon tube and a pressure difference between the high- and low-side chambers of the mercury meter or bellows-type meter. Modern mercury meters or bellows-type meters do a remarkable good job of measuring and recording these pressures under most conditions.

One condition which causes the meter real trouble is pulsation, such as occurs at the inlet or outlet of a recipracating pump. The meter tries to follow the changes in pressure resulting from the action of the pump, but if the pulsations are too rapid it must lag behind. The bellows meter can respond much more rapidly, and thus follow better than the mercury meter. However, this apparent advantage may result only in painting wide bands on the chart, rather than lines. A wide band on the chart gives a wide choice of pressures to use in computing flow. Even if the proper choice could be made, which is doubtful, it should be remembered that such a record on the chart may not be true. The orifice meter tends to lag behind as the pressures and flows change, so that it not only can get out of step or phase, but it may not have time to reach and record the maximum and minimum pressures which actually occur.

All mercury meters and some bellows-type meters are equipped with pulsation dampeners to slow down the response of the meter to the extent that such pulsations are damped out and a smooth line is drawn on the chart. The question is frequently asked, "How much error will result in computing the flow from such a damped record?" This question does not seem capable of a useful answer. Cases have been known where such records have resulted in the computation of flows which were several hundred percent wrong, or even indicated to be in the wrong direction. In general, pulsation must be eliminated if accurate

measurements is to be secured from the orifice meter. Devices employing capacity and resistance are available to reduce pulsation in those cases where it is impossible to move the orifice meter to a location where pulsation ceases to be a problem.

Another distinct difference between the orifice meter measuring system and the orifice meter instrument is that it is difficult and inconvenient to calibrate or check the calibration of the system, while it is easy and frequently necessary to check the calibration of the instrument. The system can and should be inspected to make sure that the orifice run is designed and installed according to the AGA Report No. 2, and that the proper measurements of the pipe and orifice diameter are used. If such an inspection is made and all the factors of the coefficient are properly verified, it is not necessary—and certainly not reasonable —to crate up the system and send it to a laboratory for calibration.

However, the orifice meter instrument, no matter how carefully made, should be calibrated. This is quite easily done by checking the static pressure element against a dead weight tester or a master gauge, and by checking the mercury manometer or bellows meter against a water column.

The Static Element

The same static pressure element is used in the American Westcott Orifice Meter (mercury type) and the American DRI-FLO Meter (bellows type). This element consists of a Bourdon tube of flat cross-section made of Ambrac or stainless steel. Proper heat treatment after assembly practically eliminates calibration shift due to fatigue, temperature change, or overrange up to 150% of rating. It is desirable in calibrating the pressure element against a dead weight tester to use gas or air between the dead weight tester and the pressure element to prevent the introduction of oil into the Bourdon tube. The effect of oil is to make the action sluggish and subject to change with temperature.

The Mercury Meter

The American Meter Series A-88 Orifice Meter consists of a mercury manometer on which is mounted an aluminum case containing a clock-driven chart and a pressure element. The 1800 p.s.i. working pressure manometer is illustrated in a cutaway section in Figure I. It consists of two steel chambers—the high-side and low-side chambers—which are proportioned in diameter to determine the range of the instrument. The same low-side diameter chamber is used in all ranges, while different high-side chambers are used for the standard ranges of 10 inches, 20 inches, 50 inches, 100 inches and 200 inches of water. High pressure models for 4,000 p.s.i. working pressure and 5,000 p.s.i. working pressure are similar except for heavier wall sections and metal-to-metal unions required by the higher pressures. High pressure manometers are made in 50-inch and 100-inch ranges.

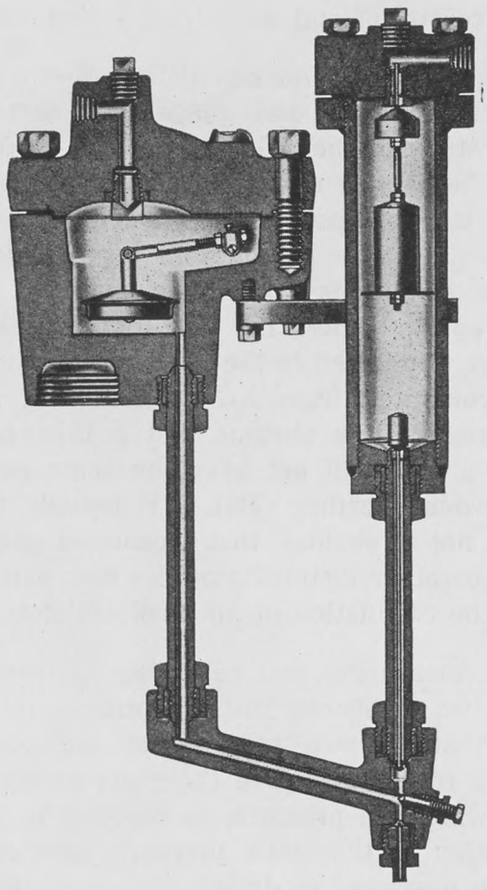


Figure 1

Within the low-side chamber are a float and lever which operate with changes in the mercury level caused by pressure differential to rotate a pressure-tight shaft.

In the high-side chambers are check valves which seal against the loss of mercury in case of overrange or underange in the instrument. As additional protection against excessive reversed pressure, the high-side chamber is provided with an extension to permit space for the mercury to accumulate under the check valve.

Maintenance of meters consists primarily of keeping the mercury and the chamber and float surfaces clean. Dirty mercury tends to cling to the walls of the chamber and to the surface of the float to cause a shift in reading, which is an

error. This error is minimized by the use of a shaped float as shown in Figure 1 because the shape of the float matches the normal meniscus, and even in the case of dirty mercury assumes the same position in relation to the mercury surface. The shaped float serves an additional purpose in that it causes a more abrupt change in force to be applied to the float, with minor deviations from its proper position in relation to the surface of the mercury. This has the effect of considerably increasing the sensitivity of the instrument.

It should be noticed that the location of the float in the low-side chamber is a particular convenience in calibrating the instrument, since it is possible to apply test pressure to the high-side chamber with the low-side chamber open and conveniently make calibration adjustments. American Meter charts are, of course, calibrated to match the geometry of the float motion.

It is particularly important to note that the calibration of the instrument is made by lengthening or shortening the lever arm between the float and the stuffing box shaft. Once the length of this lever arm is properly adjusted to secure proper calbration, it should never be necessary to readjust this length. This is true because the length of this lever arm is dependent on the relative diameters of the high-side and low-side chambers, and of course these do not change with use.

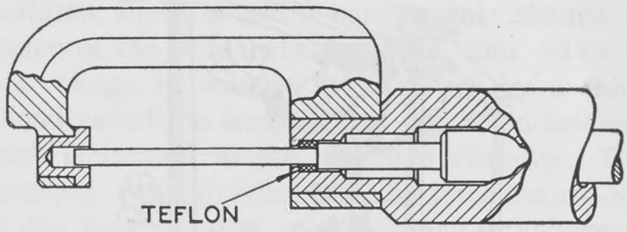
The overrange check valve which is located at the bottom of the high-side chamber is normally submerged in mercury, and therefore should seldom, if ever, require cleaning or maintenance. It is, however, conveniently removable, and capable of easy assembly in case cleaning is necessary.

The upper check valve is made available for cleaning by removing the high-side chamber cover.

Up until about three years ago, the major factor discussed in relation to maintenance of orifice meters was the stuffing box. Until that time the stuffing box consisted of a steel shaft lapped into stainless steel bushing with a grease lubricant helping to seal against leaks. Stuffing boxes of this construction required frequent cleaning and lubrication, and occasionally major mechanical overhaul—such as the installation of new bushings and the lapping in of new shafts.

The development by DuPont of a new plastic, "Teflon", has permitted the development of new types of stuffing boxes which need no lubrication and are practically free from maintenance.

The sealing end of the American Meter Type B Teflon stuffing box is shown in Figure 2. A tiny washer of Teflon in the nose of the stuffing box serves as a combination pressure seal and thrust bearing. The pressure inside the orifice meter pushes the shaft shoulder against the Teflon seal. Close clearances between the shaft and the housing prevent the Teflon from cold flowing around the shaft. A shaft guard extends to protect the end of the shaft from bending. The Type B stuffing box is rated for working pressures up to 10,000 p.s.i., and ambient temperatures to 450°F.



TYPE B TEFLON
STUFFING BOX

Figure 2

The stuffing box proper is made of stainless steel, and the small portion of the shaft is made of heat-treated, ground, and polished monel metal. These metals, together with Teflon, have been found practically free from corrosion. Teflon itself is not affected by any components known in gasses. Both the Teflon seal and the shaft are replaceable in the field.

The Bellows-Type Meter

The American DRI-FLO Meter is a bellows-type instrument for measuring differential pres-

sures without the use of mercury. A cut-away section is shown in Figure 3.

The meter outer case is of cast steel rated at 1000p.s.i. working pressure. Differential pressure ranges are 50", 100", and 200" of water. The differential pressure range is determined by the choice of interchangeable range springs.

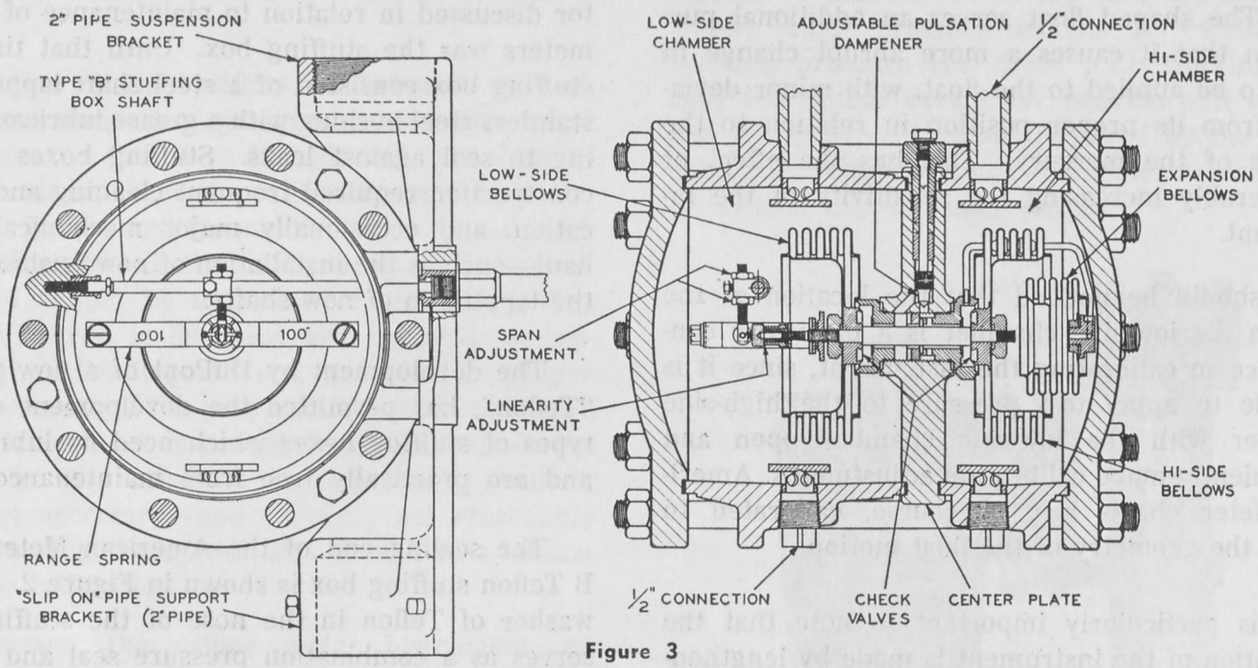


Figure 3

Even though the bellows-type meter and the mercury-type meter are quite different in appearance, they are remarkably similar in concept and, of course, perform the same function. The following table illustrates the similarity of the two types of instruments:

	Mercury Meter	Bellows-type Meter
High-side chamber	yes	yes
Low-side chamber	yes	yes
Fluid fill	mercury	glycerin & water
Separation between fluid fill and measured fluid	mercury surface or seal liquid	bellows skin or seal liquid
Fluid fill transfers between high-side and low-side	yes	yes
Pulsation dampener to slow above transfer	yes	yes
Provision for expansion of fill fluid with temperature	mercury free to expand	expansion bellows
Overrange protection by means of	check-valve	check valve
Underrange protection by means of	check valve	check valve
Motion transmitted by	Float & Lever to Type B Stuffing Box Shaft	Roller & lever to Type B Stuffing Box Shaft
Span adjustment made by changing	Length of lever	Length of lever
Linearity adjustment made by changing	Mercury quantity & Angle of lever	Push rod & Angle of lever
Range change by	Diameter & length of mercury column	Spring rate of springs

The meter case consists of high-and low-side chambers separated by a centre plate. Connected to the centre plate are stainless steel bellows—the low-side bellows in the low-side chamber, and the high-side bellows in the high-side chamber. A channel in the centre plate provides passage between the two bellows. Through this channel, a rod connects the free ends of the bellows so that they move as a unit. The bellows and channel are filled with glycerin and water.

If pressure is applied to the high-side chamber, both bellows move as a unit toward the low side, and the fluid mixture of glycerin and water flows through the channel in the centre plate from the high-side bellows to the low-side bellows. This channel is restricted and provided with a bypass channel in which is located a needle valve which may be adjusted to control the rate at which the fluid is transferred between the bellows. This valve acts as a pulsation dampener in exactly the same fashion as in the mercury meter.

The bellows act as springs with a low spring rate, so that they resist the effect of differential pressure to move them. An additional spring is required to add sufficient force to permit the bellows to move the proper distance for a given differential pressure rating. Full scale movement of the bellows is 3/8". To secure this movement with 50" of water differential, a certain range spring is used. For 100" differential, a spring is required which is approximately twice as strong as for the 50" meter. For the 200" differential, the spring is approximately four times as strong as the spring required for the 50" meter. The spring material is a 42% nickel alloy with iron, chromium, and titanium. This material has excellent corrosion resistance, low hysteresis, and has the unusual property of maintaining a constant strength through a wide range of temperatures. The feature of constant strength with changing temperature is necessary to permit the instrument to retain its calibration through its rated temperature range from -30°F. to +175°F. A typical range spring is illustrated in Figure 4. This particular shape of spring was adopted to permit convenient access to the adjustments of the meter.

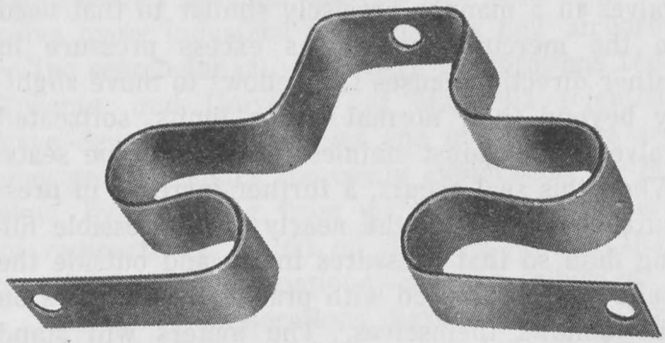


Figure 4

The filling fluid was selected to be glycerin and water for the following reasons:

1. Low coefficient of volume change with temperature.
2. Non-corrosive.
3. Low freezing point and high boiling point.
4. Readily available.
5. The viscosity is such as to permit a wide range of pulsation dampening.
6. The mixture provides some lubricating properties.

Even though the mixture of glycerin and water has a very low coefficient of expansion with temperatures, there is still a considerable change in volume of the fluid between -30°F. and +175°F. This change in volume is taken up by a third bellows called the temperature expansion bellows, which is located in the high-side chamber. The expansion or contraction of this temperature expansion bellows takes up the change in volume of the filling fluid with temperature without causing excess stresses on the measuring bellows.

This temperature expansion bellows does not provide temperature compensation. Temperature compensation is required to overcome the differential expansion of the different parts of the meter due to differences in coefficient of temperature expansion with temperature of the different materials used. For example, the cast steel case has a different coefficient of temperature expansion from the stainless steel internal parts of the meter. In order to secure complete temperature compensation so that the accuracy and calibration of the meter are not affected by changes in temperature, it is necessary to use certain internal parts of a low expansion coefficient material. The

American DRI-FLO Meter is temperature compensated so that no perceptible change in calibration or zero shift is caused by temperature changes within the rated temperature range of -30°F. to +175°F. The American DRI-FLO Meter is protected against overrange or underrange by check valves in a manner precisely similar to that used in the mercury meter. As excess pressure in either direction causes the bellows to move slightly beyond their normal stroke limits, softseated valves seal against stainless steel ring-type seats. When this seal occurs, a further increase in pressure is resisted by the nearly incompressible filling fluid so that pressures inside and outside the bellows are balanced with practically no stress on the bellows themselves. The meters will stand overpressure or underpressure up to the full rated pressure of the meter, which is 1000 p.s.i.

The motion of the bellows is transmitted to pen motion by means of a simple linkage operating the shaft of the Type B Stuffing Box. The geometery of the linkage and the Type B Stuffing Box are precisely the same as used in the mercury meter. For this reason, the standard American Meter charts may be used.

The roller is spring loaded to ride on the end of a polished push rod which is the extension of the rod connecting the ends of the two bellows. The length of the rod connecting the roller to the shaft of the Type B Stuffing Box is adjustable to permit range adjustment. The angle of the lever is adjustable to permit linearity adjustment. Both adjustments are easily made by removing the low-side cover plate. The use of the Type B Stuffing Box permits the angular pen travel to cover the entire chart without external multiplying linkage.

The power, accuracy, and repeatability of the instrument are derived from two major factors:

1. The large effective area of the bellows—over eleven square inches.
2. The full-scale travel of the pen without multiplying linkage.

The guaranteed accuracy of the instrument is better than $\pm$ ½ % of scale.

Although maintenance is normally very low on the bellows-type instrument, provision has been made in the design of the American DRI-FLO Meter to permit complete disassembly and reassembly in any small instrument shop with common tools. Even the filling of the bellows with the glycerin and water mixture has been made extremely easy by employing the "centrifugal separator" principle. This principle is used as follows: A special shaft is inserted into the empty bellows and the shaft connected to a small hand drill. The bellows is submerged under the surface of the filling fluid and is spun by means of the hand drill. The centrifugal force causes the glycerin and water mixture to flow to the extremities of the convolutions of the bellows, displacing the air, and causing the air to bubble up through the centre opening of the bellows. The small temperature expansion bellows are filled by spinning with the fingers under the surface of the fluid. The bellows are then assembled on the centre plate with all their component parts while being kept under the surface of the fluid. The actual assembly operation, including the filling of the bellows, requires only a few minutes of relatively unskilled labor.

Installation of the Bellows-Type Meter

Because the calibration of the DRI-FLO Meter is not affected by small changes in position, it is not necessary to level the instrument precisely. After the meter is set, the pen should be set on zero. Normally, no other adjustment is required. The DRI-FLO Meter does not need to be zeroed at the working pressure. No "zero shift" occurs when pressure is applied.

The meter body is provided with a double mounting bracket which permits the meter to be mounted on a 2" pipe stand, or suspended from a 2" pipe. The choice of location of the meter in relation to the meter run should take into account the fact that the meter body has both bottom and top connections. When measuring wet gas, usually a difficult problem with mercury-type meters, the DRI-FLO Meter should be mounted above the metering run with ½" guage lines connected to the bottom tops of the meter. The guage lines should drain back to the meter run without obstructions which would permit pockets for build-up of liquids. With this arrangement, no seal pots are required.

When measuring liquids, the meter should be mounted below the meter run, and if the fluid to be measured is not corrosive to stainless steel, no seal pots are required. The guage lines should connect to the top connection in the meter body. In such an arrangement, it is usually desirable to install pipe nipples and valves at the bottom connections to permit blowing out pipe scale and other solids which will collect in the meter body, particularly when the system is started up.

Meters are shipped from the factory with the pulsation dampener open to permit maximum sensitivity. If minor pulsation in the flow causes the pen to oscillate rapidly, it may be desirable to damp out the oscillation by turning the pulsation dampener clockwise until a smooth record is secured. To make this adjustment, remove the seal plug at the back of the centre plate and turn the pulsation dampener stem with a small screwdriver. This adjustment may be made with the meter under pressure and in operation.

Airborne Atomic Detector Finds New Oil Fields

By ISOTOPE PRODUCTS LIMITED

The scintillation counter—the highly sensitive radio-activity detector used in the gammagage to solve many industrial problems—is now airborne in the search for oil. Lundberg Explorations Ltd., Toronto, and University of Manitoba scientists have developed techniques and equipment which may greatly reduce the costly exploration for oil. Now, by recording from an aircraft the pattern of radioactivity, actual oil deposits—rather than just likely rock formations—may be indicated.

Lundberg Explorations have conducted surveys over nearly 100,000 square miles covering some 50 oil fields to date. With two exceptions (old fields where salt water contamination was probable), each survey showed a distinct drop in gamma radiation directly over the oil deposits. On the strength of similar surveys conducted in new fileds, some 20 wells were drilled. In all but two cases oil was found.

The relationship between radioactivity and oil wells is no new discovery. Sedimentary shales, in particular, contain considerable radioactive salts. This has allowed for radioactive logging of oil wells to determine a profile of the strata drilled. Russian scientists more than half a century ago found that oil field waters carried out radium recoverable in small quantities by adding sulphates to the water.

Chemical reactions which take place in the formation and development of an oil field tend to carry radioactivity outward in a ring around the oil pool. The oil dome, itself, becomes impervious to water and this combined with chemical factors forces ground waters rich in radioactive salts outward in a halo-like ring.

Lundberg Explorations have developed a technique of flying parallel courses; often in a grid pattern over an area. Altitude is maintained below 500 feet; speed is generally between 100 and 150 miles per hour. The records so obtained are adjusted to linear scale and plotted directly along the flight lines on the map. Interpretation makes allowance for bodies of water (which absorb virtually all radiation). Drainage systems, radical topographical changes, and places where radioactive shales are known to occur near the surface are also factors to consider in interpreting the survey.

Airborne detection for oil fields has become feasible with the development of a highly sensitive scintillation counter useable from the air.

This was developed by R. W. Pringle, K. I. Roulston, G. W. Brownell, all of the University of Manitoba.

Lundbergs have eliminated unwanted factors by removing flourescent instrument dials from their aircraft since their airborne detectors are extremely sensitive to low energy radiation. The only factor to be constantly considered is the normal background count that comes from the earth's general radioactive content. The airborne scintillometer is adjusted for this background radioactivity for each survey.

* * *

The scintillation counter contains a photosensitive crystal which reacts to gamma rays. Each gamma ray strikes off a flash of light from the crystal. The light flashes are transformed into electrons and magnified by a photomultiplier —a many-staged electron tube. Lundbergs report that a scintillation counter with large sodium iodine (thallium) crystals is over a hundred times more efficient in gamma detection than a geiger counter. Where a geiger counter, for example, may be influenced only about 40 percent by gamma radiation, 60 percent by cosmic rays penetrating the earth's atmosphere; in the same field about 99 percent of the scintillation count would be gamma radiation; only 1 percent from cosmic rays. Isotope Products use the highly sensitive scintillation counter in gammagage, level-measurement instruments, and the newly developed tire-tread gauge. In addition to sodium iodine crystals, anthracene, stilbene, terphenyl and other organic compounds can be used effectively to convert gamma radiation to an electron flow.

INTERNAL PIPELINE CAMERA DEVELOPED BY ISOTOPE PRODUCTS

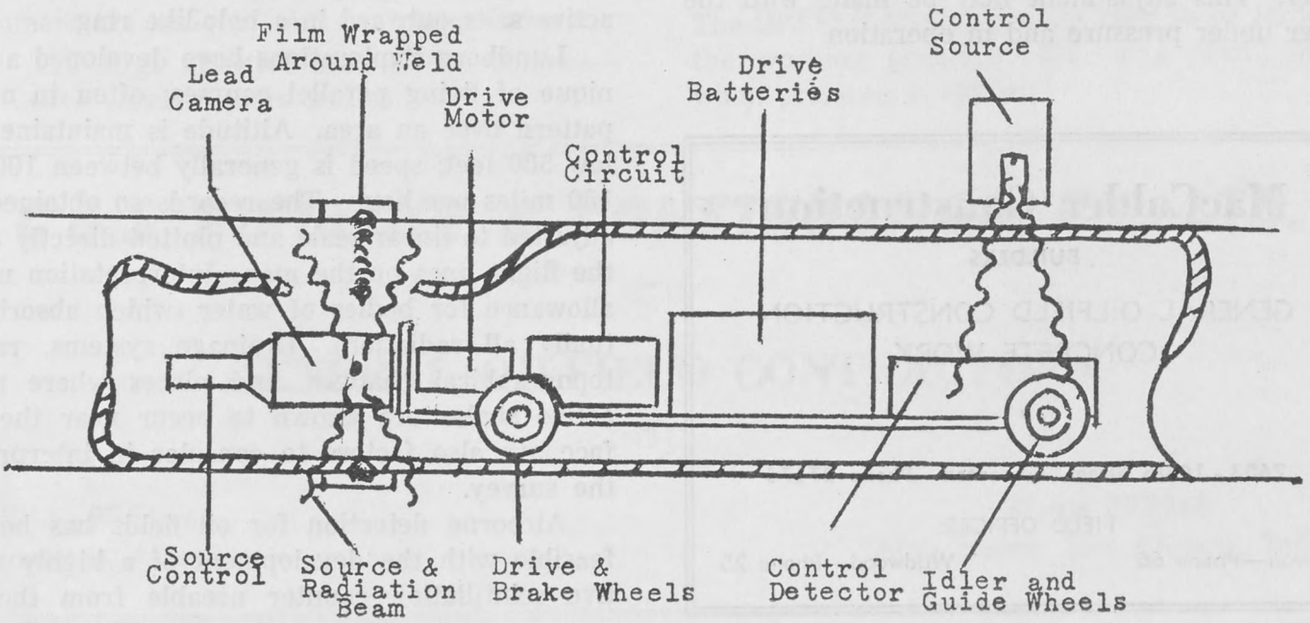
In the gamma ray inspection of welds on "big inch" pipelines, a quick and convenient method is to locate the isotope source in the centre of the pipe; wrap film completely around the weld. This provides radiography of 360 degrees with one exposure. To make this method possible and virtually automatic, Isotope Products have designed —and are now testing—a mechanized internal camera which is remotely controlled.

The main layout of this unit is shown in the sketch below. The exposure camera, containing the isotope source, is at the front of the unit. When this source is exposed gamma radiation is emitted in a narrow beam through 360 degrees. An electric drive motor, powered by two storage batteries and controlled by a radiation detection device, propels the internal camera unit through the pipeline.

The control detector, "brain" of this mechanized camera, is located at the rear of the unit. This control detector is sensitive to radiations from a low curie-strength source which is carried by the operator outside the pipe.

The operator wraps film around the weld and places the control source at a fixed distance from the weld. Automatically the internal camera runs along inside the pipe and when the detector reaches a point immediately below the control source a trigger mechanism cuts the motor and simultaneously applies a power brake. At this point the exposure source is directly aligned with the film wrapped around the pipe and an exposure

(Continued on Page 14)



The Heatless Method of Cracked Casing Repair

By R. KIRKPATRICK
Kirk's Metallizing Works Ltd. (Licencee)

This is a subject that is close to every man—be he engineer, mechanic or plain layman—because cast iron is still embodied in the structure of a major part of the machinery in use today. Even after years of improvement by our metallurgists it is still prone to crack under excess stress. The early repairman attempted to repair his cracked castings by strapping with iron bands. Gas welding was a great improvement over this crude method and still is hightly efficacious where bulk and stress are not too great. Arc welding on cast iron has also become much more effective with the introduction of electrodes that remain malleable after application.

The thermite process deserves mention but it requires elaborate, skilled and lengthy preparation.

The latter three processes mentioned have one thing in common; they require intense heat and a grey iron casting, being of a brittle unyielding nature does not take kindly to expansion caused by violent heat application. Unless preheating or other precautions are taken — the casting may crack again when in service due to these internal strains set up by the welding.

A little over ten years ago a Texan named Hal Harman patented a simple but most efficient system of cracked casting repair which is entirely mechanical in its application, in other words—heatless.

It consists of "stitching" the crack by embedding the patented Harman Lock at suitable intervals across the entire length of the fracture. These locks are made of a stainless type of alloy of tremendous tensile strength knowns as "luvar". When properly applied a casting may have its original strength restored or even better. There is no strain set up as in a weld because the crack is repaired in its relieved position This is a highly important feature. If the casting is one designed to hold fluids or gases, the cracks between the locks are filled with interlocking steel screws and a properly executed job can hold high pressures. For those who like neatness, or are concerned with resale values it should be mentioned that the resultant repair is flush with the surface and if painted is totally invisible.

To sum up the foregoing, a repair of even great magnitude may be executed with comparatively few tools and when the casting is too large to conveniently move it may be done in place, often with little or no dismantelling, provided that compressed air and electricity are available at the site, as the workman's tools would normally only fill a large suitcase. This makes air travel to remote jobs an economical possibility.

To get the most value out of a Harman repair is to detect a crack in its early stages, before real damage is done. Cracks in diesel crankcases, frames and other industrial castings where visual inspection can be regularly made can benefit greatly in this respect.

In general a Harman repair can be successfully made when there is sufficient material thickness to work with, plus access with hand tools as large as a ¼-inch electric drill. There should also be no previous welds in the area particularly those made with an arc.

Harman Process repair depots are spaced in strategic areas throughout Canada and the United States of America. They operate under license and must show unquestionable ability.

PIPE LINE CONTRACT AWARDED

C & S Pipeline Co. of Edmonton has been awarded a contract by Canadian Gulf Pipeline Ltd. in the Stettler area. The contract is for eleven miles of 4-inch and 6-inch line. Bill Winquist is acting as superintendent on the line and Don McCullogh as welding foreman. Weather permitting, work will commence June 21, 1954 and it is expected that the line will be finished on or before July 10, 1954.

Hydro Testers Ltd. have purchased new Mcfarland high pressure pumps and allied equipment capable of fluid pressure up to 13000 P.S.I. This equipment is portable allowing the highly trained crews to test casing and tubing for leaks right at the well head. This hydro pressure method has proven very successful from past performances and now with the addition of this new equipment Hydro Testers Ltd are assuring a faster, more accurate service.

Mr. Vic Matthews of **Drilling Mud Products Ltd.** started in business in Edmonton 2½ years ago. They are distributors for Baroid Products, one of the largest mud products firms in the world.

Since their modest start Drilling Mud Products have opened stock points at strategic points in Alberta and British Columbia. They have at present stores in the following locations: Peace River, Wetaskiwin, Dawson Creek, Fort St. John, Valley View and Evansburg. New stores will be opened at Drayton Valley and Breton in the immediate future.

Mr. Wally Comer, Grande Prairie is Sales Representative for the Peace River territory.

Arnold Ellis takes care of the Wetaskiwin territory and Clint Buffington the Calgary area.

Manager Vic Matthews wants to give to the oil industry on-the-spot service which is why he has opened stock points near all the major oil fields where heavy drilling activities are taking place.

PIPE LINE CAMERA

(Continued from Page 12)

is made. After a controlled exposure time, the unit automatically resumes travel till it is stopped by the control source again.

Developed by Isotope engineers Lloyd Shemansky and Basil Richards, the internal camera and drive have now undergone extensive tests on pipe sections in Isotope's Oakville laboratory. It is expected that the unit will be in operation in the field later this summer.

Isotope Products have just completed radiographic inspection of welds on the section of the Interprovincial Pipeline that crosses the St. Clair River. Similar gamma radiography is being done on the welds of Sun Pipeline—an eight-inch line between Sarnia and Toronto. Iridium 192—the same isotope used for gamma ray inspection of Imperial Oil's Sarnia Products line last year—is being employed on the Interprovincial and Sun jobs.

For these pipeline weld inspections Isotope engineers use a small portable (25 pound) exposure camera which can be clamped in any position around the exterior of the weld. A film, in a special holder, is fixed around the opposite side of the weld. The camera contains the iridium source in a rotating lead barrel which can be revolved from safe working distance by a long flexible shaft. By this technique—ideally suited for smaller diameter pipe—more than 180 degrees of weld can be radiographed with one exposure.

MAP SECTION

INDEX

How to Read a Western Canadian Oil Map

The Prairie Provinces are divided north and south into five areas separated by meridians. The first meridian is in Manitoba, the fourth on the Saskatchewan-Alberta boundary and the fifth in Western Alberta. The area between meridians is divided into **ranges** each six miles wide also running north and south. Each range is cross-divided by township lines which run east and west six miles apart, to form **townships** six miles square (36 square miles or 36 sections). No. 1 township is at the International Boundary.

The 36 **sections** in a township are each given a number which are arranged as shown:

DIVISION OF A TOWNSHIP INTO SECTIONS RANGE

31	32	33	34	35	36
30	29	28	27	26	25
19	20	21	22	23	24
18	17	16	15	14	13
7	8	9	10	11	12
6	5	4	3	2	1

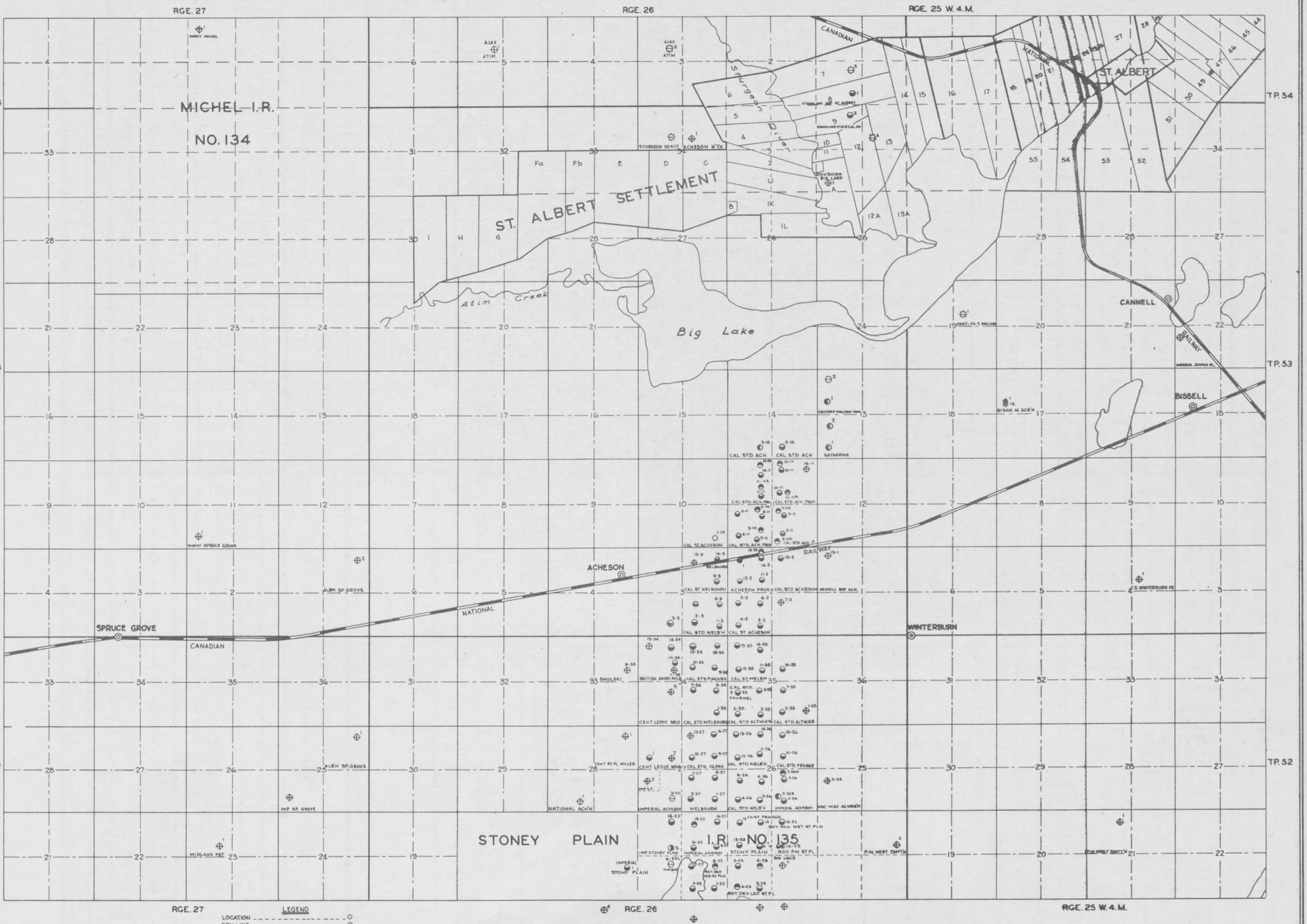
TOWNSHIP

Each section contains 640 acres and is divided into 16 **Legal Subdivisions** each containing 40 acres. The legal subdivisions in each section are numbered as shown below:

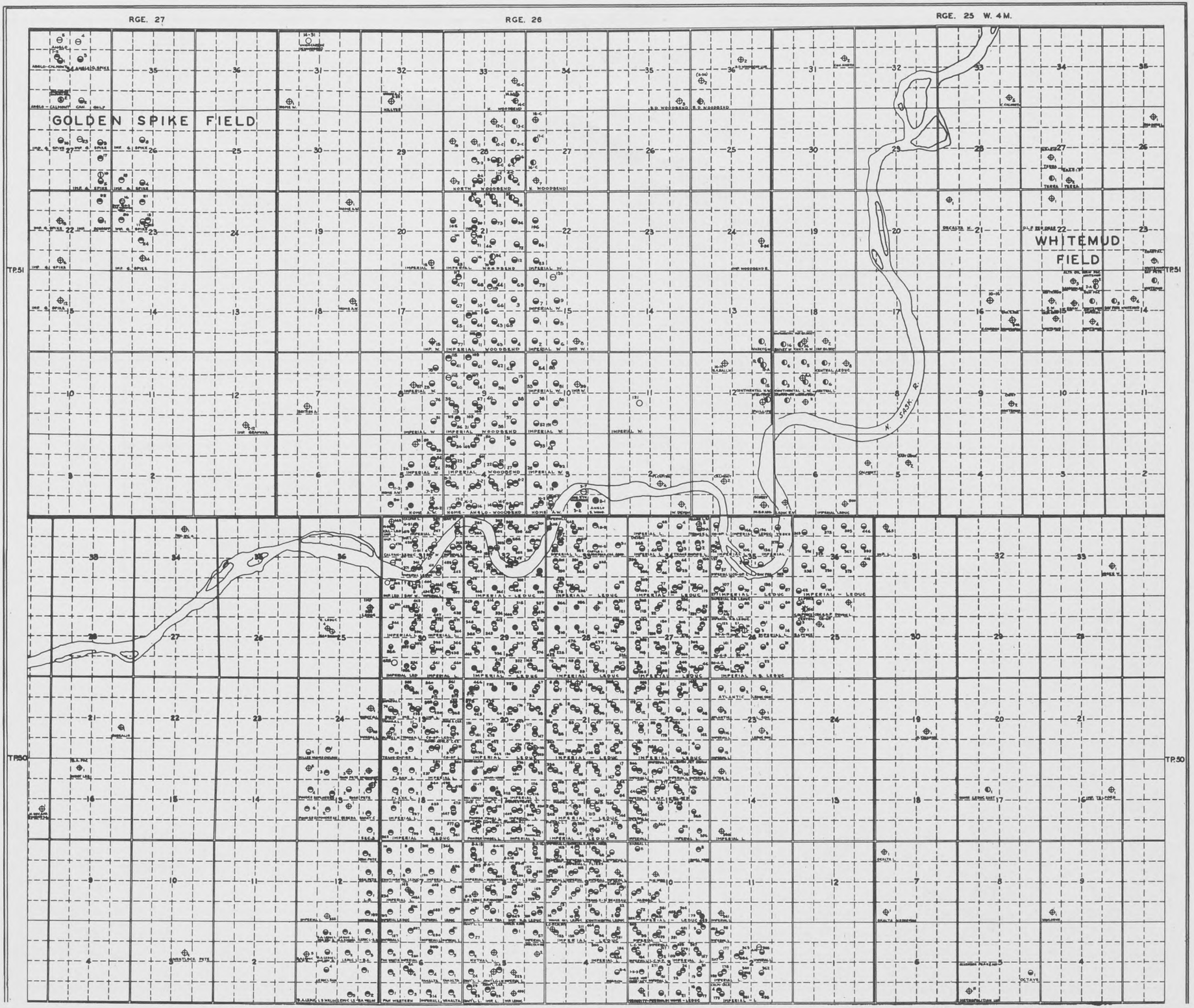
DIVISIONS OF A SECTION INTO LEGAL SUB-DIVISIONS (L.S.D.)

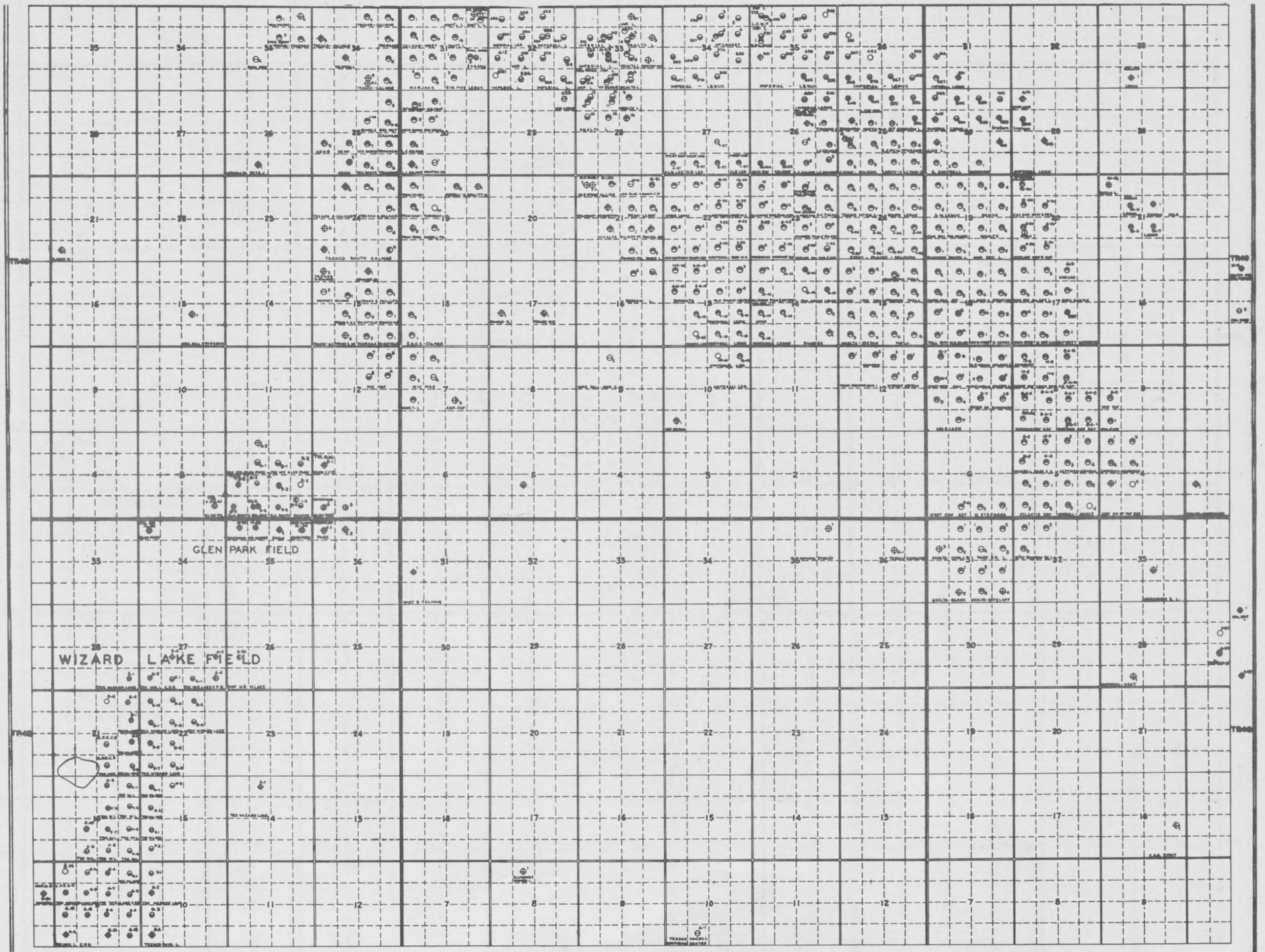
13	14	15	16
12	11	10	9
5	6	7	8
4	3	2	1

A map reference is given on page 17 as follows: L.D.S. 3, Section 3-53-26, W.4 (location Cal. Std. Wellbourn (3-3) Acheson. To obtain this location find the 4th meridian (on the Saskatchewan-Alberta boundary) and move west to Range 26 (just west of Edmonton). Locate township 53, also due west of Edmonton. Section 3 can be found at the bottom of the township, by means of the diagram given and L.S.D. 3 on the south side of the section by the same means.

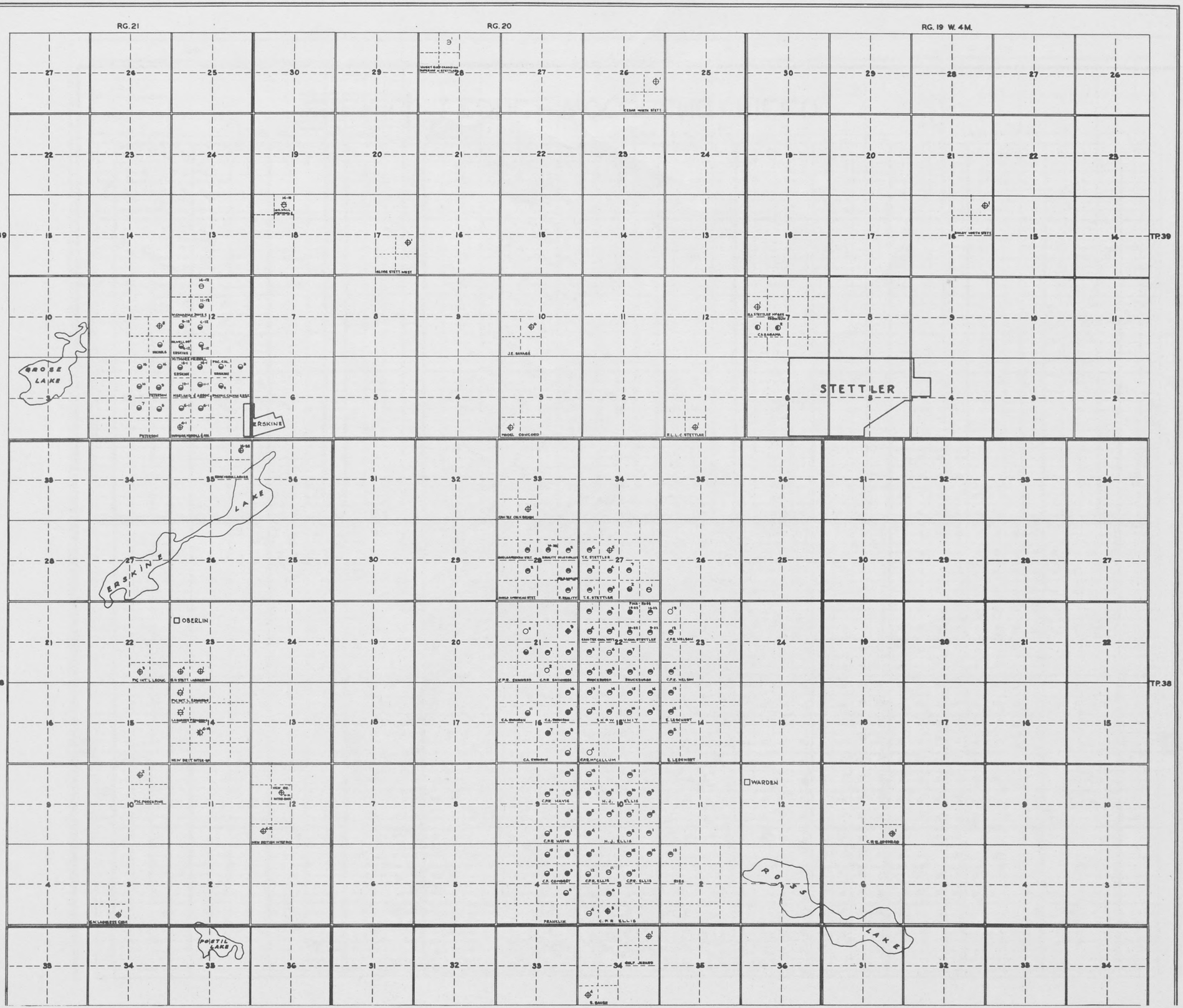


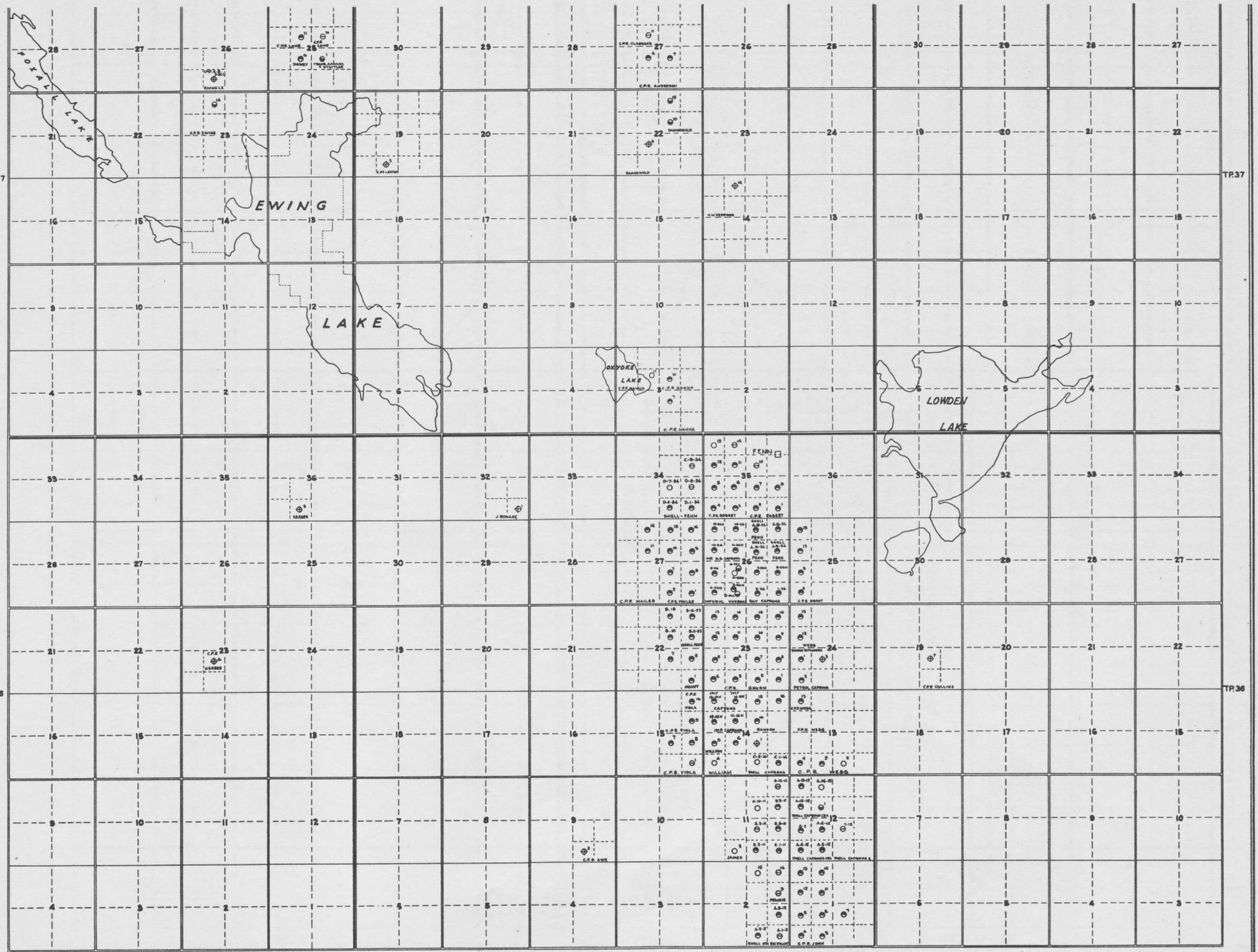
ACHESON AREA


RGE. 27
RGE. 26
RGE. 25 W. 4 M.
GOLDEN SPIKE FIELD
WHITEMUD FIELD
TP.51
TP.50
N. SASK. R.



LEDUC – WOODBEND FIELD

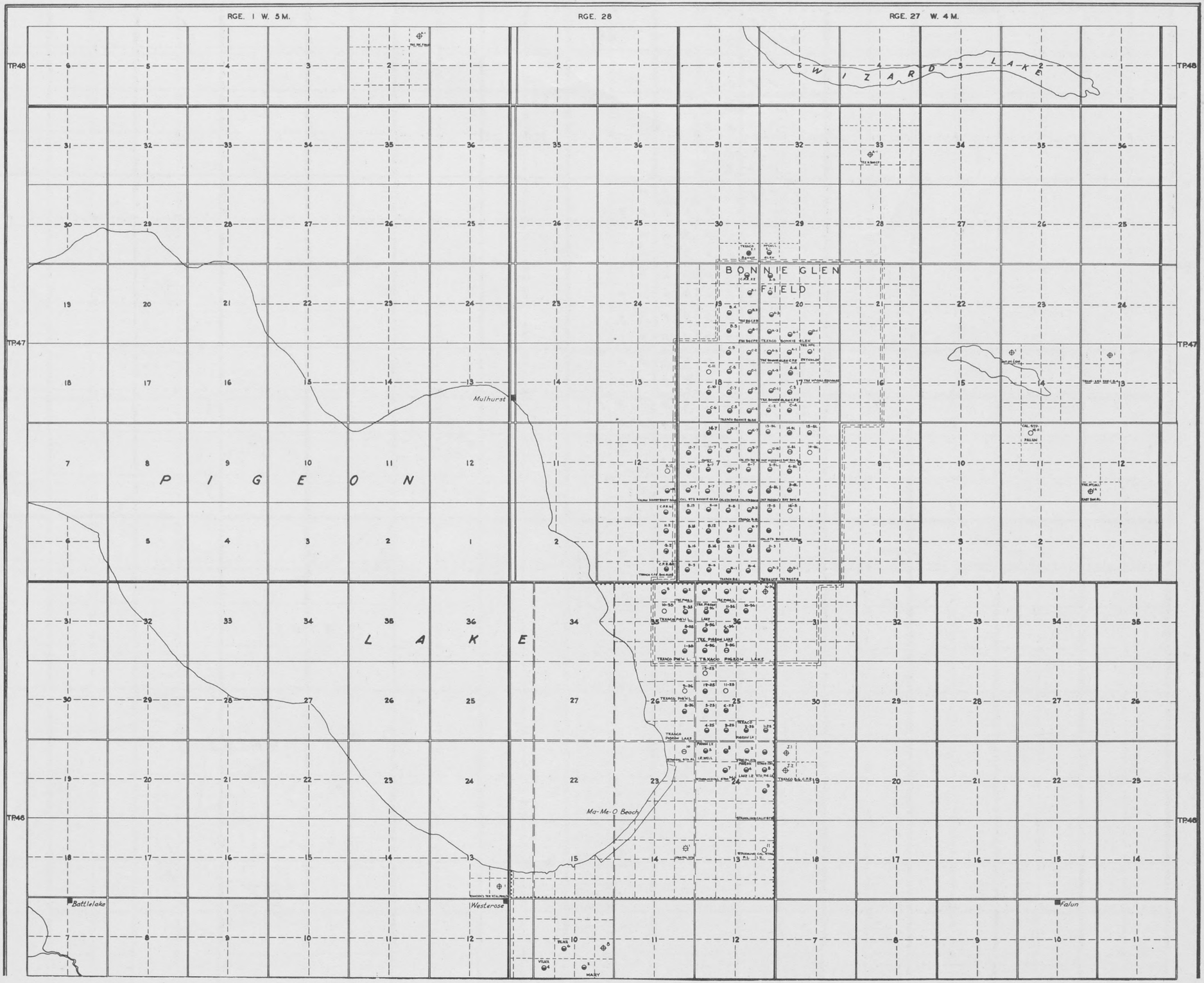

RG. 21
RG. 20
RG. 19 W. 4M.
TP. 39
TP. 38
20
ROSE LAKE
ERSKINE
LAKE
STETTLER
OBERLIN
WARDEN
ROSS
LAKE
POSTIL LAKE

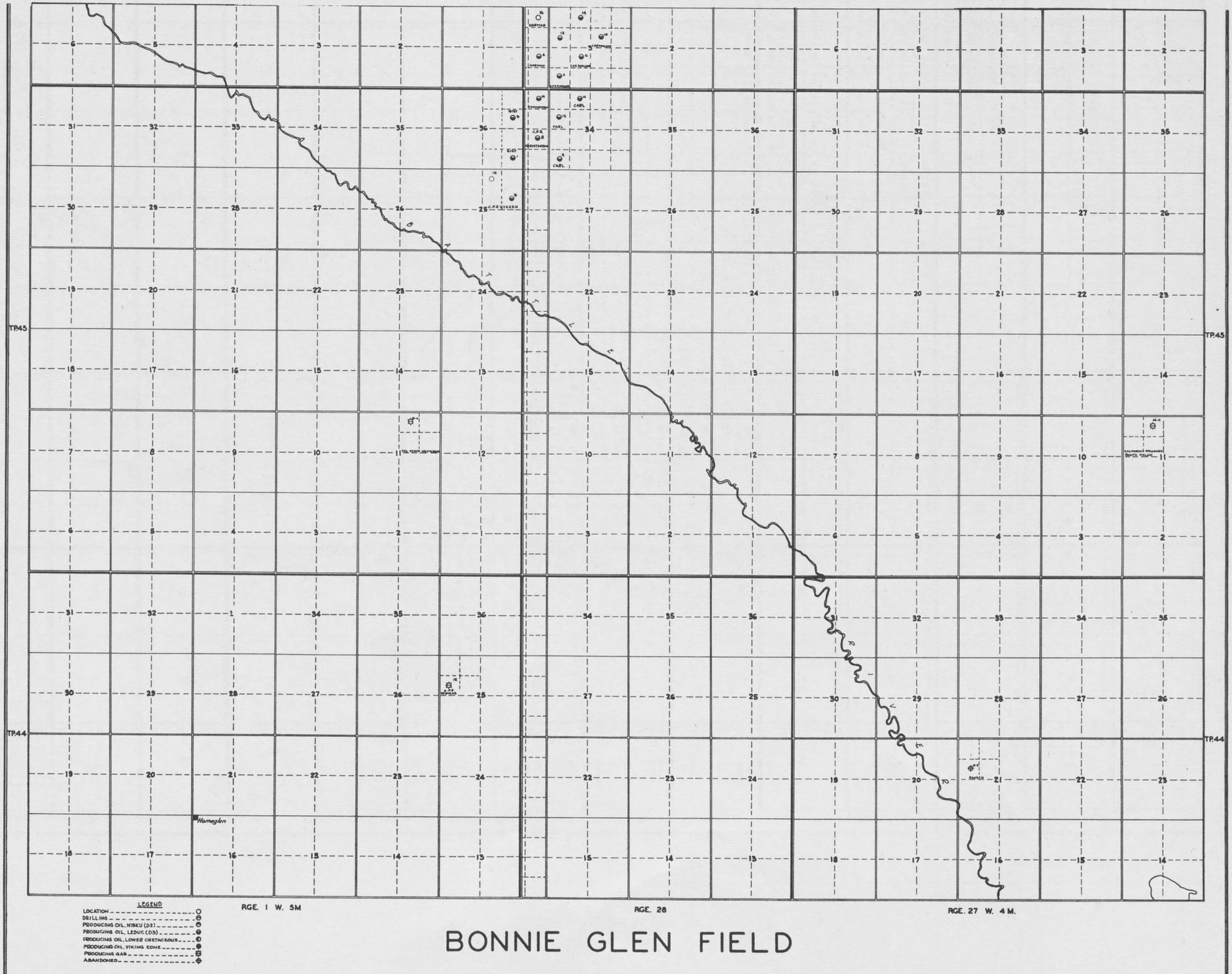


LEGEND

- LOCATION
- DRILLING
- PRODUCING OIL, LOWER CRETACEOUS
- PRODUCING OIL, VIKING
- PRODUCING OIL, NISKU (D2)
- PRODUCING OIL, LEDUC (D5)
- PRODUCING GAS
- ABANDONED

STETTLER & FENN FIELDS


RGE. 1 W. 5 M.
RGE. 28
RGE. 27 W. 4 M.
TP.48
TP.47
TP.46
WIZARD LAKE
BONNIE GLEN FIELD
PIGEON LAKE
Mulhurst
Ma-Me-O Beach
Battlelake
Westerose
Falun



BONNIE GLEN FIELD

RGE. 22 RGE. 21 RGE. 20 W. 4 M.

T.49 T.48

Little Hay Lake

Hay Lakes

Lake Miquelon

Louis L.

Washing L.

Trowel L.

Missing L.

Spider L.

Adrian L.

Ormena

T.47

T.46

BITTERN LAKE

Battle River

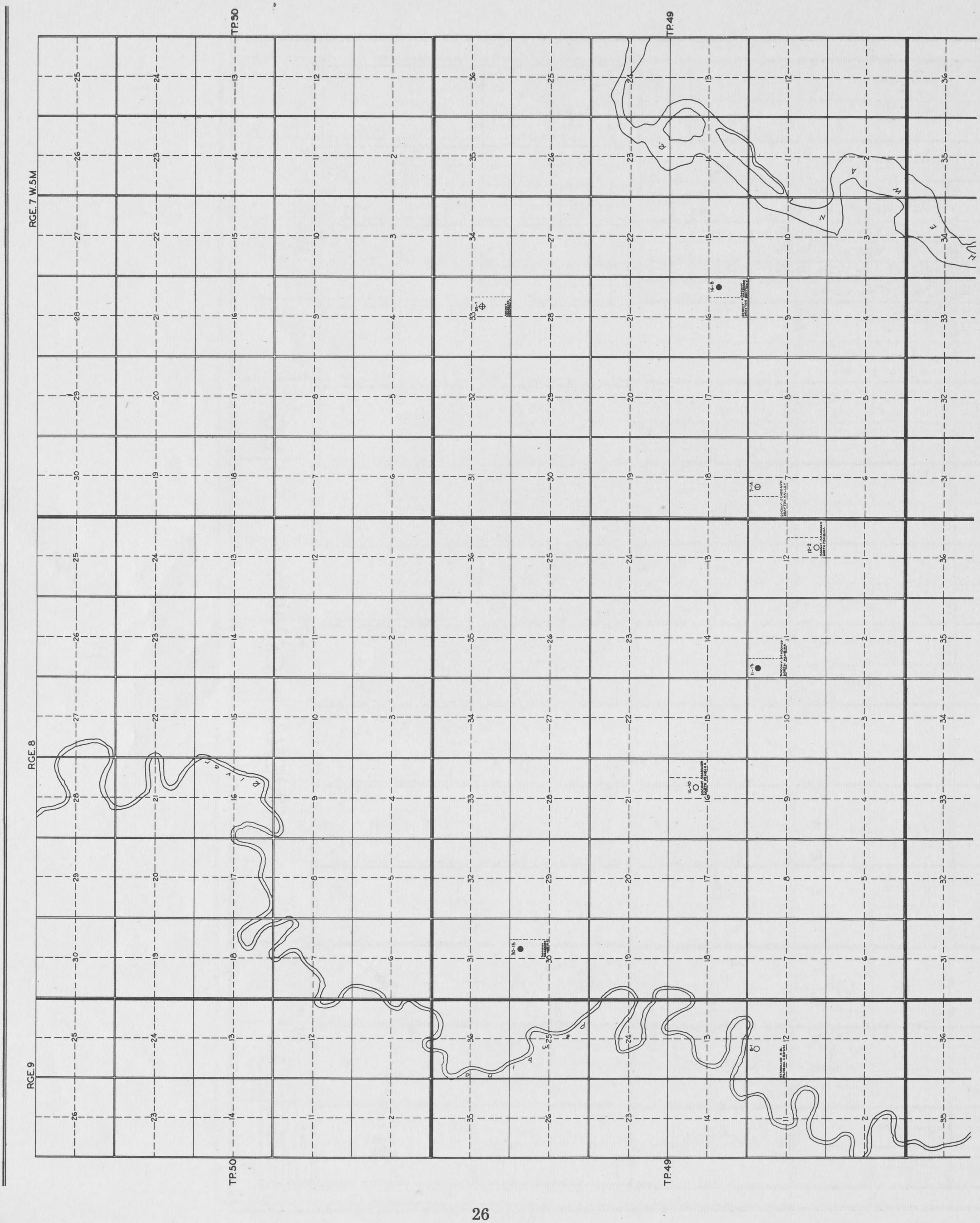
Camrose

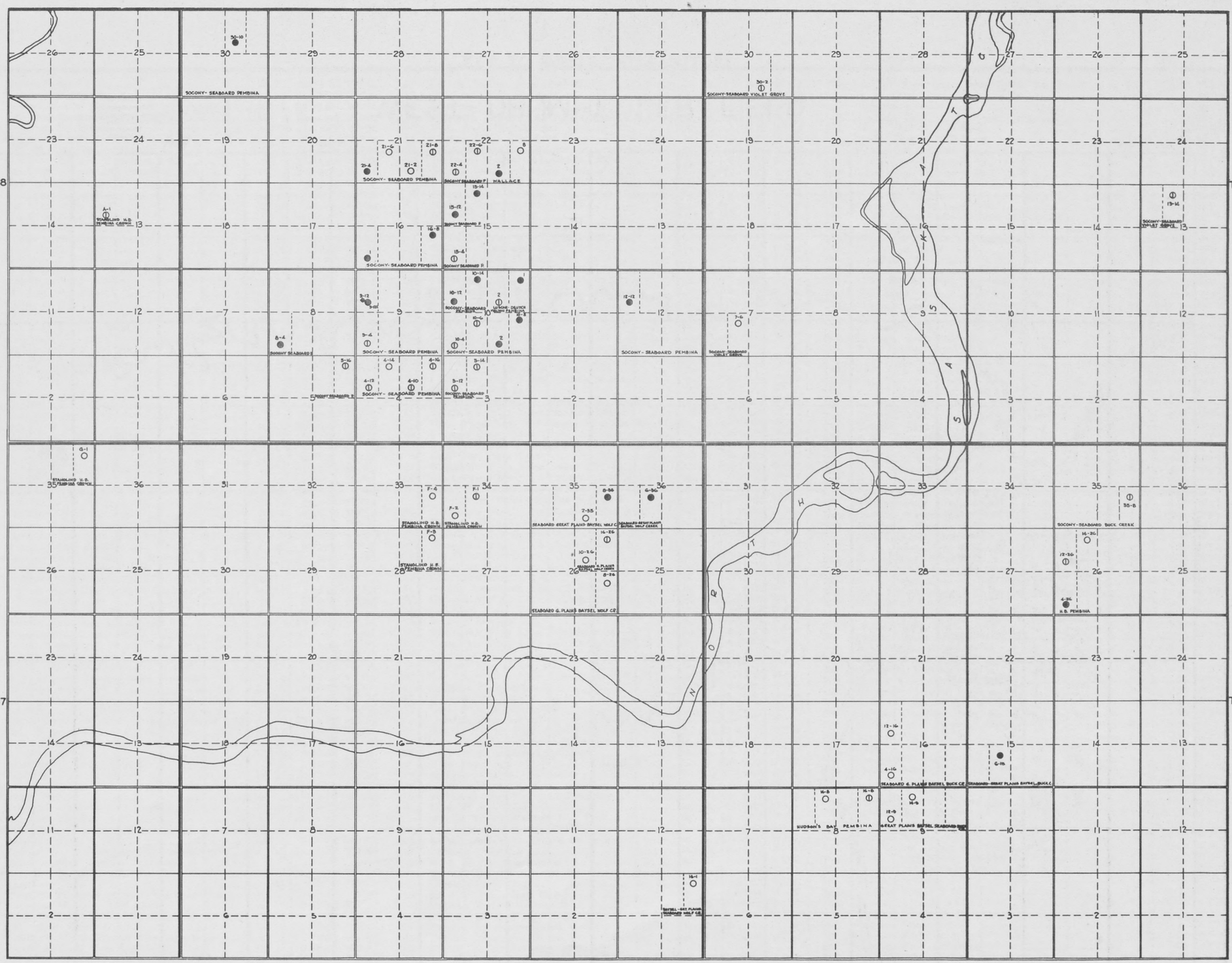
LEGEND

LOCATED ○
DRILLING ◑
COMPLETED, PRODUCING OIL, VIKING ZONE ◑
COMPLETED, PRODUCING GAS ☼
SALT WATER DISPOSAL WELL ⊕
PREVIOUSLY PRODUCING, NOW ABANDONED ⊕
ABANDONED ⊕

RGE. 22 RGE. 21 RGE. 20 W. 4 M

ARMENA - CAMROSE FIELD


RGE. 7 W.5M
RGE. 8
RGE. 9
TP.50
TP.49
35-7
16-8
7-14
SOCONY-SEABOARD DRAYTON VALLEY
12-2
SOCONY-SEABOARD NORTH PEMBINA
11-13
SOCONY-SEABOARD NORTH PEMBINA
16-10
SOCONY SEABOARD NORTH PEMBINA
30-15
8-1
STANOLIND N-B PEMBINA CROWN
TP.50
TP.49



LEGEND

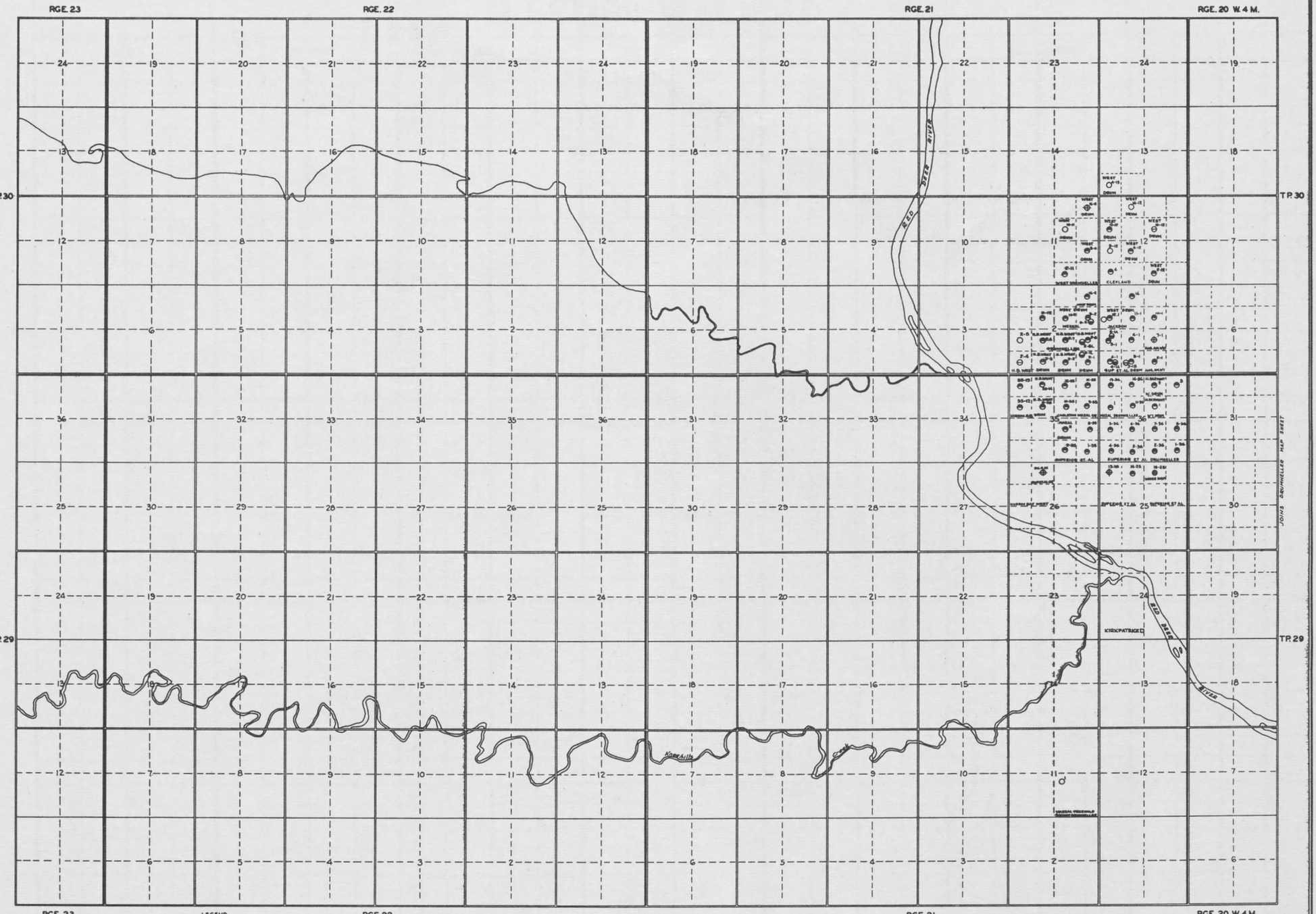
LOCATED

DRILLING

COMPLETED, PRODUCING OIL, CARDIUM

ABANDONED

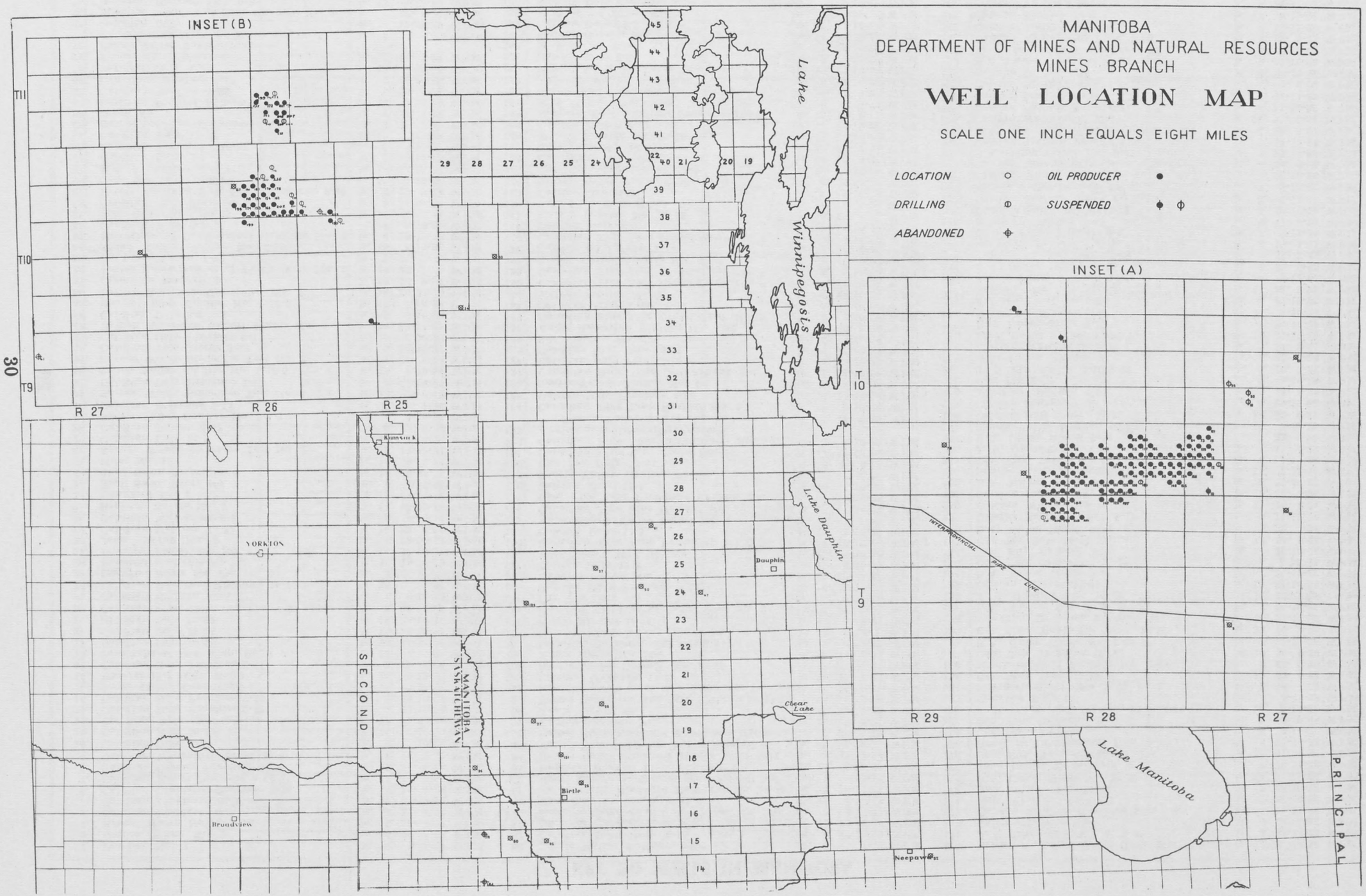
PEMBINA FIELD



WEST DRUMHELLER FIELD

KEY TO WELLS IN MANITOBA

1. Downey No. 1 ..... ls. 11, 9- 1-27 WPM
2. Gordon White No. 1 ..... ls. 5, 14- 1-28 WPM
3. Robert Moore No. 1 ..... ls. 5, 20- 1-27 WPM
4. Cal-Stan Linklater 2-21 ..... ls. 2, 21- 7-28 WPM
5. Cal-Stan Linklater 10-21 ..... ls. 10, 21- 7-28 WPM
6. Cal-Stan Linklater Province 7-20 ..... ls. 7, 20- 7-28 WPM
7. Cal-Stan Ewart Province 4-14 ..... ls. 4, 14- 8-28 WPM
8. Cal-Stan Cromer Province 8-27 ..... ls. 8, 27- 8-28 WPM
9. Cal-Stan Woodnorth Province 5-18 ..... ls. 5, 18- 9-27 WPM
10. Cal-Stan Daly 2-1 ..... ls. 2, 1-10-28 WPM
11. Cal-Stan Daly 10-1A ..... ls. 10, 1-10-28 WPM
12. Cal Stan Daly 15-1 ..... ls. 15, 1-10-28 WPM
13. Cal-Stan Daly Province 2-12 ..... ls. 2, 12-10-28 WPM
14. Cal-Stan Daly Province 7-12 ..... ls. 7, 12-10-28 WPM
15. Jones 10-12 (Can. Sup.) ..... ls. 10, 12-10-28 WPM
16. Haskett 15-2 (Can. Sup.) ..... ls. 15, 2-10-28 WPM
17. Cal-Stan Daly Province 2-11 ..... ls. 2, 11-10-28 WPM
18. Cruickshank 14-4 (Can. Sup.) ..... ls. 14, 4-10-28 WPM
19. Cal-Stan Daly 10-18 ..... ls. 10, 18-10-27 WPM
20. Cal-Stan Daly 15-18 ..... ls. 15, 18-10-27 WPM
21. Cal-Stan Daly 16-20 ..... ls. 16, 20-10-27 WPM
22. Cal-Stan West Daly Province 8-29 ..... ls. 8, 29-10-28 WPM
23. Cal-Stan Elkhorn 7-8A ..... ls. 7, 8-11-29 WPM
24. Cal-Stan Hargrave Province 15-16 ..... ls. 15, 16-11-27 WPM
25. Imperial Birtle No. 1 ..... ls. 1, 27-17-26 WPM
26. Imperial Madeline No. 1 ..... ls. 16, 18-18-29 WPM
27. Imperial Foxwarren No. 1 ..... ls. 16, 32-19-27 WPM
28. Jean Cleland No. 3 ..... ls. 4, 22-20-25 WPM
29. Cal-Stan Hartney 16-33 ..... ls. 16, 33- 5-24 WPM
30. Cal-Stan Wawanesa 3-1 ..... ls. 3, 1- 8-18 WPM
31. Brandon Coutts No. 2 ..... ls. 14, 16-10-19 WPM
32. Langford No. 1 ..... ls. 5, 29-14-14 WPM
33. Shell Swan River No. 1 ..... ls. 9, 1-37-28 WPM
34. Shell Swan River No. 2 ..... ls. 13, 3-35-29 WPM
35. Hunt No. 1 ..... ls. 10, 9- 1-27 WPM
36. Spruce Woods Structure Test No. 1 ..... ls. 13, 12-10-17 WPM
37. Cal-Stan Daly 14-1 ..... ls. 14, 1-10-28 WPM
38. Cal-Stan Tilston 5-32 ..... ls. 5, 32- 5-29 WPM
39. Souris Valley Goulter No. 3-4-3 ..... ls. 4, 3-10-28 WPM
40. Cal-Stan Waskada 9-13 ..... ls. 9, 13- 1-26 WPM
41. Spruce Woods Structure Test No. 3 ..... ls. 10, 4- 8-15 WPM
42. Cal-Stan Daly Province 3-12 ..... ls. 3, 12-10-28 WPM
43. Souris Valley Goulter No. 1-16-3 ..... ls. 16, 3-10-28 WPM
44. Spruce Woods Structure Test No. 2 ..... ls. 1, 20- 9-14 WPM
45. Cal-Stan Two Creeks 9-22 ..... ls. 9, 22-12-27 WPM
46. Cal-Stan Daly Province 5-12 ..... ls. 5, 12-10-28 WPM
47. British American Gilbert Plains No. 1 ..... ls. 16, 18-24-21 WPM
48. Cal-Stan Daly 3-9 ..... ls. 3, 9-10-28 WPM
49. Souris Valley Goulter No. 2-10-3 ..... ls. 10, 3-10-28 WPM
50. British American Grandview No. 1 ..... ls. 16, 30-24-23 WPM
51. Creekside Mitchell No. 1 ..... ls. 10, 32- 9-27 WPM
52. Petcal Homestead et al Turtle Mtn. No. 1 ..... ls. 10, 26- 1-20 WPM
53. Cal-Stan Reston 7-27 ..... ls. 7, 27- 6-27 WPM
54. Souris Valley Goulter No. 5-15-3 ..... ls. 15, 3-10-28 WPM
55. New Concord Development Gardiner No. 4 ..... ls. 4, 19-10-27 WPM
56. Cal-Stan Daly 5-9 ..... ls. 5, 9-10-28 WPM
57. B.A. Grandview No. 3 ..... ls. 16, 15-25-25 WPM
58. Cal-Stan Daly Province 8-11 ..... ls. 8, 11-10-28 WPM
59. Petcal Homestd. Brit. Emp. Linklater 3-29 ..... ls. 3, 29- 7-28 WPM
60. Can. Sup. Cruickshank 11-4 ..... ls. 11, 4-10-28 WPM
61. B.A. Grandview No. 4 ..... ls. 13, 34-26-23 WPM
62. Cal-Stan Daly 2-9 ..... ls. 2, 9-10-28 WPM
63. Imperial Virden 5-3-10-27 ..... ls. 5, 3-10-27 WPM
64. Cal-Stan Daly 12-12 ..... ls. 12, 12-10-28 WPM
65. Baysel Cal-Stan Hargrave 2-21 ..... ls. 2, 21-11-27 WPM
66. Owen No. 1 ..... ls. 8, 11- 2-22 WPM
67. Imperial Haskett 13-2-10-28 ..... ls. 13, 2-10-28 WPM
68. Cal-Stan Findlay 9-26 ..... ls. 9, 26- 7-25 WPM
69. Can. Sup. Skelton 2-10 ..... ls. 2, 10-10-28 WPM
70. Cal-Stan Daly 14-3 ..... ls. 14, 3-10-28 WPM
71. Pascar No. 1 Westover ..... ls. 1, 21- 1-27 WPM
72. Souris Valley Yankee Princess Futurity McInnes No. 1 ..... ls. 8, 20- 4-25 WPM
73. Cal-Stan Daly 11-12 ..... ls. 11, 12-10-28 WPM
74. Royalite Triad et at East Hartney No. 1 ..... ls. 7, 27- 5-24 WPM
75. Imperial Haskett 14-2-10-28 ..... ls. 14, 2-10-28 WPM
76. Royalite Triad et al Scarth No. 1 ..... ls. 14, 19- 8-26 WPM
77. Can. Sup. Skelton 1-10 ..... ls. 1, 10-10-28 WPM
78. Cal-Stan North Butler Province 8-11 ..... ls. 8, 11-10-29 WPM
79. Cal-Stan Daly Province 4-12 ..... ls. 4, 12-10-28 WPM
80. Cal-Stan Treat Province ..... ls. 15, 29-15-28 WPM
81. Cal-Stan Daly 1-9 ..... ls. 1, 9-10-28 WPM
82. Cal-Stan Daly 13-1 ..... ls. 13, 1-10-28 WPM
83. Baysel Bruxelles 1-27 ..... ls. 1, 27- 6-11 WPM
84. Canadian Superior Haskett 16-2 ..... ls. 16, 2-10-28 WPM
85. Royalite Triad et al Lulu Lake No. 1 ..... ls. 16, 14- 1-21 WPM
86. Souris Valley McKague 27-2 ..... ls. 2, 27- 1-27 WPM
87. Cal-Stan Daly Prov. 6-10 ..... ls. 6, 10-10-28 WPM
88. Imperial Haskett 12-2-10-28 ..... ls. 12, 2-10-28 WPM
89. Royalite Triad et al Two Creeks No. 1 ..... ls. 2, 3-13-27 WPM
90. Can. Sup. Cruickshank 13-4 ..... ls. 13, 4-10-28 WPM
91. Baysel Calif. Standard Hargrave No. 13-15 ..... ls. 13, 15-11-27 WPM
92. Regt. Marwayne Dragon Jup. Powell No. 1 ls. 9, 6-10-28 WPM
93. Imperial Haskett 11-2-10-28 WPM ..... ls. 11, 2-10-28 WPM
94. Baysel Calif. Standard Sharpe Lake 3-27 ..... ls. 3, 27- 1-22 WPM
95. Petcal Homest'd Long Island Birdtail No. 1 ls. 9, 21-15-27 WPM
96. Baysel Calif. Standard Boissevain No. 3-20 ..... ls. 3, 20- 3-19 WPM
97. Kodiak-Dunning No. 1 ..... ls. 16, 28- 1-27 WPM
98. Anglo Dando 32-3 ..... ls. 3, 32- 1-25 WPM
99. Baysel California Standard Elkhorn 16-18A ..... ls. 16, 18-11-28 WPM
100. Royalite Triad et al Max Lake No. 1 ..... ls. 4, 36- 1-21 WPM
101. Calstan Waskada 16-13 ..... ls. 16, 13- 1-26 WPM
102. Souris Valley Downey No. 10-13 ..... ls. 13, 10- 1-27 WPM
103. Anglo Gould No. 14-3 ..... ls. 3, 14- 2-27 WPM
104. Imperial Bluewing Lake 13-4-24-27 ..... ls. 13, 4-24-27 WPM
105. Can Tex Daly 8-8 ..... ls. 8, 8-10-28 WPM
106. Anglo Skelton 4-14 ..... ls. 14, 4- 3-27 WPM
107. Royalite Triad et al Lulu Lake No. 2 ..... ls. 6, 24- 1-21 WPM
108. Can Tex Daly 7-3 ..... ls. 7, 3-10-28 WPM
109. Calstan Daly Province 6-12 ..... ls. 6, 12-10-28 WPM
110. (Anglo) Coates No. 20-13 ..... ls. 13, 20- 4-27 WPM
111. Calstan Daly 11-3 ..... ls. 11, 3-10-28 WPM
112. (Can. Sup.) M & H 16-5 ..... ls. 16, 5-10-28 WPM
113. Canadian Pipe Line Producers No. 7 ..... ls. 7, 10-10-28 WPM
114. Calstan Daly 13-3 ..... ls. 13, 3-10-28 WPM
115. Anglo-Souris Valley Smart No. 1-4 ..... ls. 4, 1- 1-26 WPM
116. Canadian Pipe Line Haskett No. 10 ..... ls. 10, 2-10-28 WPM
117. Can. Pipe Line Producers Skelton No. 8 ..... ls. 8, 10-10-28 WPM
118. Calstan Daly 16-1 ..... ls. 16, 1-10-28 WPM
119. Souris Valley Goulter No. 6 ..... ls. 9, 3-10-28 WPM
120. Can Tex Daly 13-34 ..... ls. 13, 34- 9-28 WPM
121. Canadian Pipe Line Jones No. 15 ..... ls. 15, 12-10-28 WPM
122. Canadian Pipe Line Cruickshank No. 5 ..... ls. 5, 4-10-28 WPM
123. Anglo-Calmont-Security-Freehold-Souris Valley-McKee No. 15-1 ..... ls. 1, 15- 3-25 WPM
124. Canadian Pipe Line Haskett No. 9 ..... ls. 9, 2-10-28 WPM
125. Calstan Daly Province 4-10 ..... ls. 4, 10-10-28 WPM
126. Souris Valley Goulter No. 4 ..... ls. 6, 3-10-28 WPM
127. Canadian Pipe Line Cruickshank No. 1 ..... ls. 1, 4-10-28 WPM
128. Cal-Stan Daly Prov. 3-10 ..... ls. 3, 10-10-28 WPM
129. Cal-Stan Daly Prov. 4-11 ..... ls. 4, 11-10-28 WPM
130. S.V. Goulter No. 7-5 ..... ls. 5, 3-10-28 WPM
131. Anglo American Birdtail No. 4-30 ..... ls. 4, 30- 8-26 WPM
132. Canadian Pipe Line Cruickshank No. 6 ..... ls. 6, 4-10-28 WPM
133. Cal-Stan Daly Prov. 3-11 ..... ls. 3, 11-10-28 WPM
134. McIvor Roselea No. 1 ..... ls. 9, 28-10-26 WPM
135. Canadian Pipe Line Cruickshank No. 7 ..... ls. 7, 4-10-28 WPM
136. Canadian Pipe Line Cruickshank No. 8 ..... ls. 8, 4-10-28 WPM
137. Souris Valley Goulter No. 8-3-3 ..... ls. 3, 3-10-28 WPM
138. Calstan Daly Prov. 1-11 ..... ls. 1, 11-10-28 WPM
139. Canadian Pipe Line Cruickshank No. 4 ..... ls. 4, 4-10-28 WPM
140. Calstan Daly 8-9 ..... ls. 8, 9-10-28 WPM
141. McIvor Roselea No. 28-15 ..... ls. 15, 28-10-26 WPM
142. Can. Sup. M & H 8-5 ..... ls. 8, 5-10-28 WPM
143. Calstan Daly 4-9 ..... ls. 4, 9-10-28 WPM
144. Souris Valley Pascar-Studer 24-1 ..... ls. 1, 24-10-27 WPM
145. Can. Sup. Cruickshank 12-4 ..... ls. 12, 4-10-28 WPM
146. Cal. Stan. Whitewater 12-16 ..... ls. 12, 16- 3-21 WPM
147. Bass Daly No. 16-33 ..... ls. 16, 33- 9-28 WPM
148. McIvor Roselea No. 28-10 ..... ls. 10, 28-10-26 WPM
149. Calstan Daly 7-2 ..... ls. 7, 2-10-28 WPM
150. National Bulk Carriers Province 13-10 ..... ls. 13, 10- 9-11 WPM
151. M & H 9-5 (Can. Sup.) ..... ls. 9, 5-10-28 WPM
152. Souris Valley-Warnez No. 13-5 ..... ls. 5, 13- 5-22 WPM
153. Imperial Virden 8-28-10-26 ..... ls. 8, 28-10-26 WPM
154. British American-Union Grose No. 1 ..... ls. 12, 27-10-26 WPM
155. Calstan Daly 8-2 ..... ls. 8, 2-10-28 WPM
156. M & H 1-5 (Can. Sup.) ..... ls. 1, 5-10-28 WPM
157. McIvor Roselea No. 14-28 ..... ls. 14, 28-10-26 WPM
158. Calstan Daly 12-1 ..... ls. 12, 1-10-28 WPM
159. M & H 7-5 (Can. Sup.) ..... ls. 7, 5-10-28 WPM
160. Calstan Daly Province 9-10 ..... ls. 9, 10-10-28 WPM
161. McIvor Roselea No. 16-28 ..... ls. 16, 28-10-26 WPM
162. British American-Union Grose No. 11-27 ..... ls. 11, 27-10-26 WPM
163. British American-Union Grose No. 5-27 ..... ls. 5, 27-10-26 WPM
164. Souris Valley-Security Freehold-McIvor-Virden No. 33-1 ..... ls. 1, 33-10-26 WPM
165. Calstan Daly Province 5-11 ..... ls. 5, 11-10-28 WPM
166. Calstan Daly Province 10-10 ..... ls. 10, 10-10-28 WPM
167. Can. Sup. M & H 2-5 ..... ls. 2, 5-10-28 WPM
168. Can. Sup. M & H 10-5 ..... ls. 10, 5-10-28 WPM
169. Can. Sup. Thomson 16-32 ..... ls. 16, 32- 9-28 WPM
170. British American-Union Grose No. 13-27 ..... ls. 13, 27-10-26 WPM
171. J. P. Owen-Rcss-V.L.A. 3-33 ..... ls. 3, 33-15-29 WPM
172. Calstan Lauder 9-14 ..... ls. 9, 14- 5-25 WPM
173. Calstan Scallion Province 3-11 ..... ls. 3, 11-11-26 WPM
174. Imp. Virden 7-28-10-26 ..... ls. 7, 28-10-26 WPM
175. Imp. Virden 2-28-10-26 ..... ls. 2, 28-10-26 WPM
176. B.A. Union Grose No. 14-27 ..... ls. 14, 27-10-26 WPM
177. John Lucien Canart No. 1 ..... ls. 6, 16-11-29 WPM
178. Can. Sup. Thomson 15-32 ..... ls. 15, 32- 9-28 WPM
179. Northern Development Daly 2-31 ..... ls. 2, 31-10-28 WPM
180. Can-Tex Daly 8-3 ..... ls. 8, 3-10-28 WPM
181. Can. Sup. Thomson 9-32 ..... ls. 9, 32- 9-28 WPM
182. J. P. Owen-Poole-Manson 14-5-14-29 ..... ls. 14, 5-14-29 WPM
183. Can-Tex Daly 1-8 ..... ls. 1, 8-10-28 WPM
184. Northern Rustin No. 2-16 ..... ls. 2, 16- 7-27 WPM
185. Cal. Stan Daly 13-33 ..... ls. 13, 33- 9-28 WPM
186. Northern West Sinclair No. 2-28 ..... ls. 2, 28- 7-29 WPM
187. Can. Sup. Thomson 10-32 ..... ls. 10, 32- 9-28 WPM
188. B.A. Union Grose No. 4-27 ..... ls. 4, 27-10-26 WPM
189. Cal. Stan. Routledge Prov. 13-29 ..... ls. 13, 29- 9-25 WPM
190. Canadian Devonian Hepburn No. 1 ..... ls. 16, 23-10-26 WPM
191. Imp. Virden 1-28-10-26 WPM ..... ls. 1, 28-10-26 WPM
192. J. P. Owen Tilston 12-32-5-29 ..... ls. 12, 32- 5-29 WPM
193. Calstan Roselea 15-21 ..... ls. 15, 21-10-26 WPM
194. B.A. Union Grose 3-27 ..... ls. 3, 27-10-26 WPM
195. Can. Sup. Grieve 3-5-10-28 ..... ls. 3, 5-10 28 WPM
196. Can. Sup. Skinner 6-28 ..... ls. 6, 28-10-26 WPM
197. Can Tex Daly 14-34 ..... ls. 14, 34- 9-28 WPM
198. B.A. Union Roach 8-32 ..... ls. 8, 32- 9-28 WPM
199. Calstan Scallion Prov. 5-11 ..... ls. 5, 11-11-26 WPM
200. Calstan Whitewater 11-16 ..... ls. 11, 16- 3-21 WPM
201. Calstan Daly 12-33 ..... ls. 12, 33- 9-28 WPM
202. B.A. Union Grose 6-27 ..... ls. 6, 27-10-26 WPM
203. Souris Valley Drynan 15-2 ..... ls. 15, 2-11-26 WPM
204. Can. Sup. Grieve 6-5 ..... ls. 6, 5-10-28 WPM
205. J. P. Owen-Brodie 1-11-4-29 ..... ls. 1, 11- 4-29 WPM
206. B.A. Union Roach 7-32 ..... ls. 7, 32- 9-28 WPM
207. Souris Valley Drynan 16-2 ..... ls. 16, 2-11-26 WPM
208. Calstan Daly Prov. 14-32 ..... ls. 14, 32- 9-28 WPM
209. Calstan Harmsworth 6-24 ..... ls. 6, 24-12-26 WPM
210. Northern Pierson 7-11 ..... ls. 7, 11- 3-29 WPM
211. Can Tex Daly 2-3 ..... ls. 2, 3-10-28 WPM
212. J. P. Owen-Ellis 3-10-3-22 ..... ls. 3, 10- 3-22 WPM
213. B.A. Union Ritchie ..... ls. 5, 33- 9-28 WPM
214. Calstan Whitewater 9-17 ..... ls. 9, 17- 3-21 WPM
215. J. P. Gwen Bekker 13-32-10-25 ..... ls. 13, 32-10-25 WPM
216. B.A. Union Grose 2-27 ..... ls. 2, 27-10-26 WPM
217. MacKellar Hooper 11-5 ..... ls. 11, 5-10-28 WPM
218. B.A. Union Grose 1-27 ..... ls. 1, 27-10-26 WPM
219. Calstan Daly Prov. 11-32 ..... ls. 11, 32- 9-28 WPM
220. Souris Valley Drynan 10-2 ..... ls. 10, 2-11-26 WPM
221. B.A. Union Ritchie 6-33 ..... ls. 6, 33- 9-28 WPM
222. Calstan Pierson Prov. 2-29 ..... ls. 2, 29- 2-29 WPM
223. Northern Nellie Lake 3-17 ..... ls. 3, 17- 1-21 WPM
224. Souris Valley-Drynan 9-2 ..... ls. 9, 2-11-26 WPM
225. Northern Tilston 9-31 ..... ls. 9, 31- 5-29 WPM
226. Calstan South Virden 1-12 ..... ls. 1, 12-10-26 WPM
227. Calstan Scallion Prov. 2-11 ..... ls. 2, 11-11-26 WPM
228. Souris Valley-Drynan 7-2 ..... ls. 7, 2-11-26 WPM
229. Calstan Virden 1-26 ..... ls. 1, 26-10-26 WPM
230. Calstan Roselea 3-34 ..... ls. 3, 34-10-26 WPM
231. B.A.-Union Grose No. 8-27 ..... ls. 8, 27-10-26 WPM
232. Calstan Scallion Prov. 7-11 ..... ls. 7, 11-11-26 WPM
233. B.A. Can. Sup. Woodnorth No. 1 ..... ls. 3, 33- 8-27 WPM
234. Calstan Whitewater 16-17 ..... ls. 16, 17- 3-21 WPM
235. Calstan Scallion Prov. 4-11 ..... ls. 4, 11-11-26 WPM
236. Calstan Scallion Prov. 1-11 ..... ls. 1, 11-11-26 WPM
237. Calstan North Tilston 4-3 ..... ls. 4, 3- 6-29 WPM
238. Calstan Virden 4-26 ..... ls. 4, 26-10-26 WPM
239. B.A.-Union Grose No. 9-27 ..... ls. 9, 27-10-26 WPM
240. J. P. Owen-North Coulter 5-32 ..... ls. 5, 32- 2-26 WPM
241. Calstan Whitewater Prov. 2-20 ..... ls. 2, 20- 3-21 WPM
242. Calstan Scallion 6-11 ..... ls. 6, 11-11-26 WPM
243. Calstan Scallion 14-2 ..... ls. 14, 2-11-26 WPM
244. Calstan Virden 2-26 ..... ls. 2, 26-10-26 WPM
245. Calstan Virden 6-26 ..... ls. 5, 26-10-26 WPM
246. Calstan Roselea 6-34 ..... ls. 6, 34-10-26 WPM
247. Calstan Kirkella (Prov./) 5-21 ..... ls. 5, 21-12-29 WPM
248. Calstan Daly Province 6-32 ..... ls. 6, 32- 9-28 WPM
249. Calstan Scallion 11-2 ..... ls. 11, 2-11-26 WPM
250. Perry Fulk 6-36-6-27 ..... ls. 6, 36- 6-27 WPM
251. Calstan Virden (Prov.?) 13-24 ..... ls. 13, 24-10-26 WPM
252. Can. Dev.-Oak Lake No. 1 ..... ls. 4, 35- 8-25 WPM
253. Calstan Roselea 4-34 ..... ls. 4, 34-10-26 WPM
254. Calstan Pierson Prov. 10-11 ..... ls. 10, 11- 3-29 WPM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DEPARTMENT OF MINES AND NATURAL RESOURCES
MINES BRANCH
WELL LOCATION MAP
SCALE ONE INCH EQUALS EIGHT MILES
LOCATION
DRILLING
ABANDONED
OIL PRODUCER
SUSPENDED
INSET (A)
INSET (B)
Lake Winnipegosis
Lake Dauphin
Lake Manitoba
Clear Lake
INTERPROVINCIAL PIPE LINE
YORKTON
Dauphin
Birtle
Broadview
Neepawa
Kamsack
SECOND
SASKATCHEWAN
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R 28
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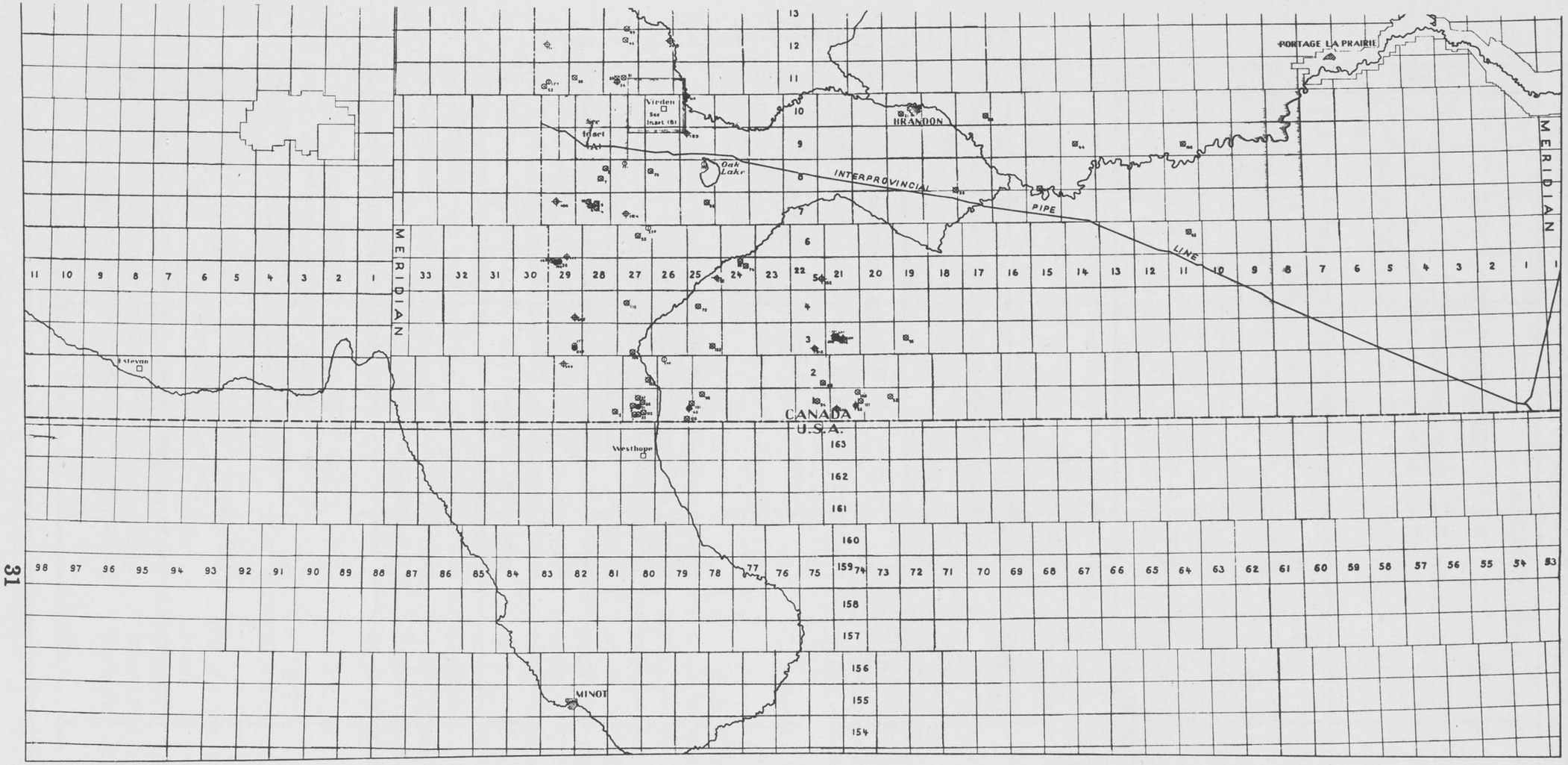
PORTAGE LA PRAIRIE
BRANDON
Virden
See Inset (B)
Oak Lake
INTERPROVINCIAL PIPE LINE
MERIDIAN
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Estevan
Westhope
CANADA
U.S.A.
MINOT

STURGEON LAKE FIELD

How the Trust Company Serves the Oil Industry

By MONTREAL TRUST COMPANY

ROYALTIES EXPLAINED

The role of the trust company in the development of the oil industry in Canada is becoming increasingly important as the value of its services are recognized.

The trust company welcomes the opportunity to serve this expanding community with the specialized services available to corporations and individuals.

Unlike banks in the United States, Canadian banks are not permitted by law to provide trustee services, therefore separate corporations, maintaining branch systems similar to that of the chartered banks, provide these important services.

As financial agent and in many other capacities the responsibility and availability of the corporate trustee is in constant demand. Among the duties and responsibilities undertaken by the trust company are the following:

Stock Transfer Agent and Dividend Disbursing Agent

When a company creates its capital and makes a public issue of common, preferred or other shares, the facilities and services of a trust company as Stock Transfer Agent or Registrar are particularly valuable.

Trust companies operating a branch system are well qualified and equipped to provide specialized services in all of the principal financial centres, permitting broad facilities for the distribution and transfer of shares. A company is thus relieved of this responsibility and is, at the same time, able to establish Stock Transfer Agencies on a more economical basis. The valuable experience of the trained personnel of trust companies in determining the application of governmental tax requirements and Dominion and Provincial Succession Duties regulations, is of special value to a company and its shareholders.

The trust company as Transfer Agent keeps accurate and up-to-date records of the issuance of share capital, the names and addresses of the shareholders and particulars of changes in share ownership taking place from day to day through stock exchange transactions and otherwise.

The trust company relieves a company of the burdensome detail of disbursing dividends, including the preparation of lists of shareholders, cheques notices, the mailing of and payment of dividend cheques. It will also assist the company in convening meetings of shareholders when required, recording attendance of shareholders and supplying experienced scrutineers.

The Stock Transfer Departments of trust companies handle extraordinary transactions such as the issuance of rights to purchase stock, the redemption of shares and the exchange of securities resulting from any financial re-organization.

Companies, as a rule, employ the services of a trust company realizing that the appointment of an experienced, qualified agent relieves the senior executives of many responsibilities, affording them freedom to devote their energies to their own particular business.

Registrar

It is the function of a Registrar to guard against any over-issue of stock. The Registrar checks the accuracy of the shares issued by the Stock Transfer Agent, records and countersigns the stock certificates. This gives further protection to the company and the shareholder.

Trusteeship Under Oil Royalties

Land Owner's Gross Royalty

This type of royalty occurs when the petroleum, natural gas, etc., are in free hold ownership and the owner enters into a lease with some individual or company, either for a term of years or in perpetuity, but reserving unto himself a stipulated royalty which is usually 12½% of the gross production from any wells drilled on the lands concerned. The owner of the royalty may dispose of all, or any part of it, by selling to a group of individuals or to a syndicate, in which cases, the services of a trust company are often used for the purpose of the collection and distribution of the percentage of production covered by the royalty reservation.

Preferred Royalty

A preferred royalty is one that repays the preferred royalty holder in his original investment before other types of royalty holders participate in the net proceeds of production. This type of royalty is created when an individual or company obtains a lease from the Crown, or a land owner who owns the freehold rights, as the case may be, transfers this lease to a Royalty Trust and sells

units thereof to the public. After allowing for the Crown or land owner's gross royalty reserved by the said lease and which is usually 12½%, there is available for sale 87½% of the petroleum and natural gas rights. These may be divided into any number of units for the purpose of sale but usually the units are based on a full 1% of the said rights or the production therefrom. In some cases the lease holder may reserve unto himself a percentage of the gross royalty, in which case, the percentage of rights turned over to the Royalty Trust would be smaller than the 87½% mentioned. The units for sale to the public are usually divided into two classes, one being the preferred royalty unit, the other being an ordinary royalty unit.

For example, we will take the case of a lease where 12½% of the royalty is reserved to the Crown and the lease holder, before turning the same over to the Royalty Trust, reserves unto himself a further 7½% which means a net 80% of rights are available to the Trust. These rights are then divided into forty preferred units and forty ordinary units. We will suppose that the preferred units are sold at $3,000 each and the ordinary units at $1,000 each; that would mean that there would be realized from the sale, a total of $120,000 from the preferred units and $40,000 from the ordinary units, or a grand total of $160,000. These moneys, less whatever underwriting commissions payable, are then deposited with the trustee for the Royalty Trust and used in payment of the cost of the drilling of the well, the cost of acquiring the lease, purchase of surface rights and easements, production machinery, etc., and all other out-of-pocket and administration expenses.

After the well is drilled to completion, or abandoned in the case of failure, the preferred royalty holders are entitled to receive a pro rata refund of any unexpended moneys and which thereby reduces the amount of their preference. If the well is a successful one the preferred royalty holders will receive out of the net production, after taking into consideration any payment made for unexpended moneys aforementioned, the full amount of their original investment and after this has been paid to them, then both preferred and ordinary royalty holders will participate in the net production on an equal or pro rata basis.

The duties of the trustee are first the collection of the proceeds of the sale of the royalty units, the proper disbursement thereof, and after the well is brought into production, the collection of the proper proportion, payment of all production costs, including net proceeds to the royalty holders, either quarterly, monthly or as may be otherwise specified in the trust agreement.

Ordinary Royalties

Referred to and described in the above paragraphs. The same service is performed by the trust company as in the case of preferred royalties.

Net Royalties

These occur when an individual or a company acquires a lease and turns it over to a Royalty Trust in the same fashion as is set forth under the

heading "Preferred Royalty" and the net units of royalty production are sold to the public. In this case the total proceeds from the sale of the units are received by the company or individual creating the trust and whose obligation it is to drill the well on the lands concerned. The duties of the trustee are to collect the proper percentage of the net production, to pay all costs of production and in most cases even the cost of the production machinery, all cost of purchase of surface rights and easements, etc., out-of-pocket and administration expenses and trustees fees, payment of income tax and then distribute the net proceeds to the royalty holders.

Trustee of Bonds, Debenture Stock or Notes of Corporations

The terms of the obligation to be created and issued by a corporation contemplating the raising of capital through borrowings from the public or from other companies or institutions vary considerably. A Corporate Trustee is normally appointed when this method of financing is undertaken. The duties and responsibilities of the Trustee are accordingly specifically defined and embodied in a document generally referred to as the "Trust Deed" governing its appointment and constituting the trust. It is the responsibility of the trust company to hold in its name as Trustee, the title to the property mortgaged or hypothecated, provided the obligation issued is secured by the pledge of the corporation's property and fixed assets. The trust company certifies and delivers the securities created to the underwriters or purchasers only when and to the extent authorized by the terms of the Trust instrument and upon the written instructions of the proper officers of the issuing coporation. Accurate, readily available records are kept by the Trustee of the bonds or debentures so issued including the serial numbers, maturity of the issue, coupons attached and such other pertinent data as required by the issuing company and others so concerned. The trustee determines the provisions of any Sinking Fund provided for the retirement of secuities prior to their stated maturity to assure that the company fulfils its covenant under the provisions of any Sinking Fund created. There are varied and multiple duties and responsibilities assumed by the Trustee in regard to payment of taxes by the company, licence fees, investment of moneys held by it for the security holders, convening meetings and all obligations placed upon it by the terms of the document establishing the rights of the company and the security holders.

Escrow Agent

An Escrow Agreement is usually entered into when corporations and/or individuals deposit with a trust company licences, document, deeds, shares or other securities, which upon compliance with the terms of the Escrow Agreement are delivered to designated parties. The trust company's function is to hold the deposited instruments, subject to the terms of the agreement and account to the ultimate owners. In many cases there are escrows required under the Securities Acts of the several Canadian provinces.

Trustee of Employee Pension Trusts, Thrift and Savings Plans

When a company establishes a pension, thrift or savings fund, as many of the oil companies do, to provide for the retirement of its employees, it quite frequently creates a funded trusteed plan. This type of plan permits the necessary flexibility to meet changing economic conditions.

The trust company accepts from the company, its and the employees' contributions and invests the moneys, subject to such restrictions in force, from time to time governing Pension Trusts and Thrift and Savings Plans at interest rates usually much more favorable than under other plans. The trust company renders every assistance to the company in devising a plan best suited to the existing circumstances and undertakes all of the duties and responsibilities imposed upon it by the Trust instrument.

Agents for Real Estate and Special Transactions.

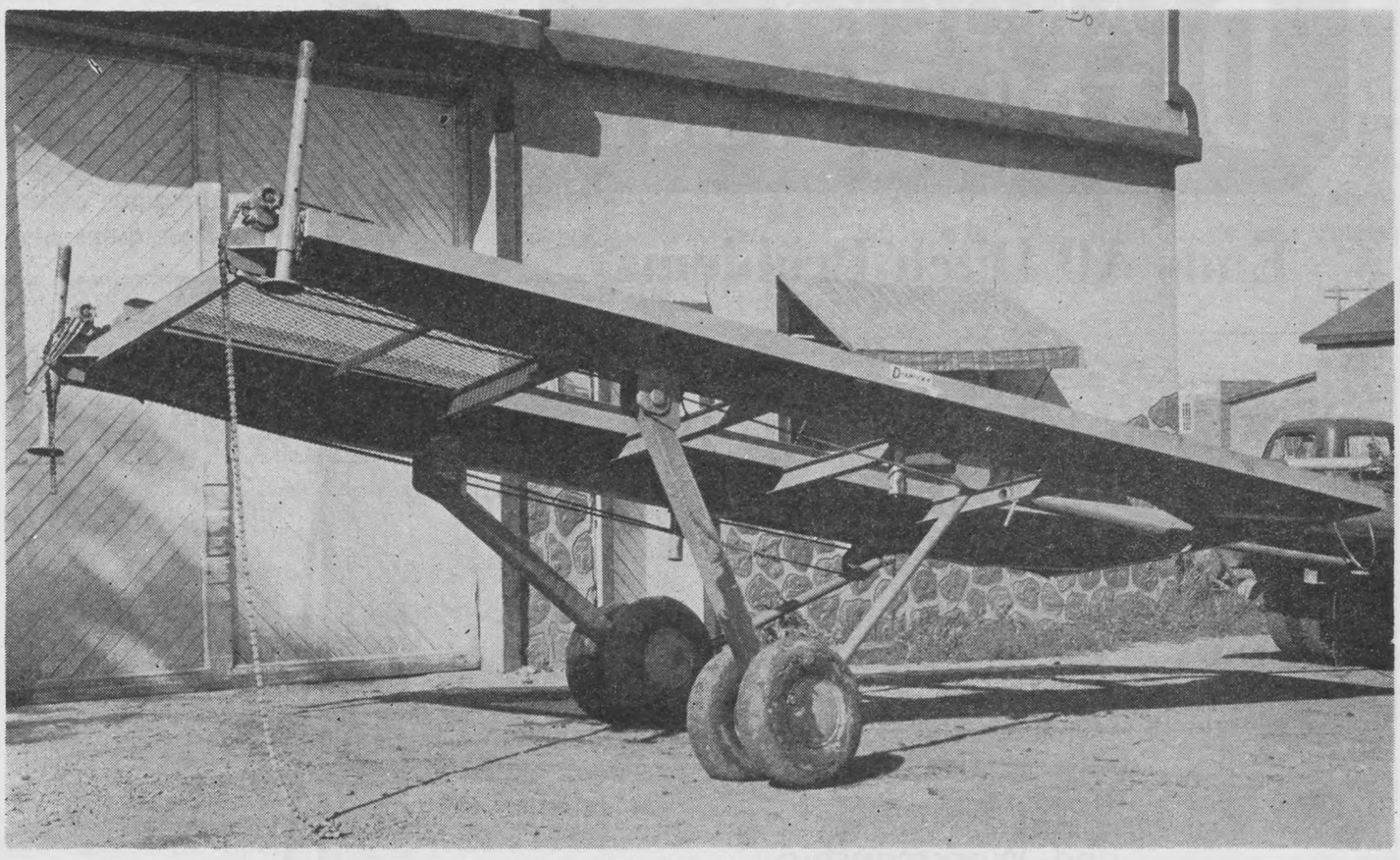
Certain transactions, particularly those involving the purchase of property, oil lands and licenses can often be handled more advantageously if carried out by a trust company so that the interest of the corporation or individual, on whose behalf they are acting, is not disclosed.

Trust companies also offer complete services for the sale, purchase and management of residential, commercial and industrial properties.

The above are but a few of the more specific cases in which the facilities and specialized services of trust companies are available to those individuals and corporations who are interested in the development of Canada's oil future.

In conclusion we suggest that a call upon the Trust Officer of your choice for a short discussion of the manner in which the Trust Company may be of service to you, may be the means of increasing the efficiency of your business operations or relieving your organization of certain tasks which may be performed more economically by a specialist.

CURRENT NEWS



Dianocky's New Ditch Bridge

DIANOCKY WELDING DITCH BRIDGE

Dianocky Welding Ltd. has introduced a new service to the oil industry in the Ditch Bridge. This is the first of its kind to appear in Canada or the United States.

The Ditch Bridge allows seismic crews easy and fast access over uneven, water or snow-filled ditches with no damage to roads, and a minimum of wear and tear on their equipment.

Mr. Dianocky and his staff were asked to build a unit that could be used for bridging ditches. They decided that separate wheel assemblies would be the best solution. This was the starting point for a very successful bridge design.

The time saving that may be realized from the use of this unit is most apparent.

Special Features of This Unit

1. Separate wheel assembliles.
   Separate hand operated chain hoists are used to adjust each wheel to the desired position. Raising and lowering is done from above and wheels may easily be locked in any position.
2. Open space in centre.
   The wide open space in the centre allows clearance for a standard slush pit. The sliding walk allows for drilling from any position on the bridge.
3. Cat walk.
   The folding cat walk on the side provides the crew easy access to the pump and cab of the truck during drilling operations.
4. Legs.
   The legs on the rear of the bridge may be used for balancing purposes or may be easily removed when it is necessary to drive to the opposite side of the ditch.

The above pictured Ditch Bridge is capable of spanning ditches 20 feet wide and 8 feet deep. The safety load that can be carried is 20 tons. For greater or smaller loads other sizes may be made to specifications.

Operation

The truck backs the Ditch Bridge into the ditch.

The wheels are levelled by the separate hand operated chain hoists and locked into position.

The Drill is then driven onto the bridge or to the other side of the ditch and drilling can at once be started without further manoeuvring. This entire operation can be done in a matter of minutes.

After the hole is completed the Drill is driven off the bridge and it is a simple matter to attach the bridge to the truck. The bridge is then towed onto the road and the wheels are levelled to a

DIANOCKY DITCH BRIDGE

Ends All Ditch Problems

■

No Winching **No Road Damage**

No Time Loss

■

GUARANTEE . . .

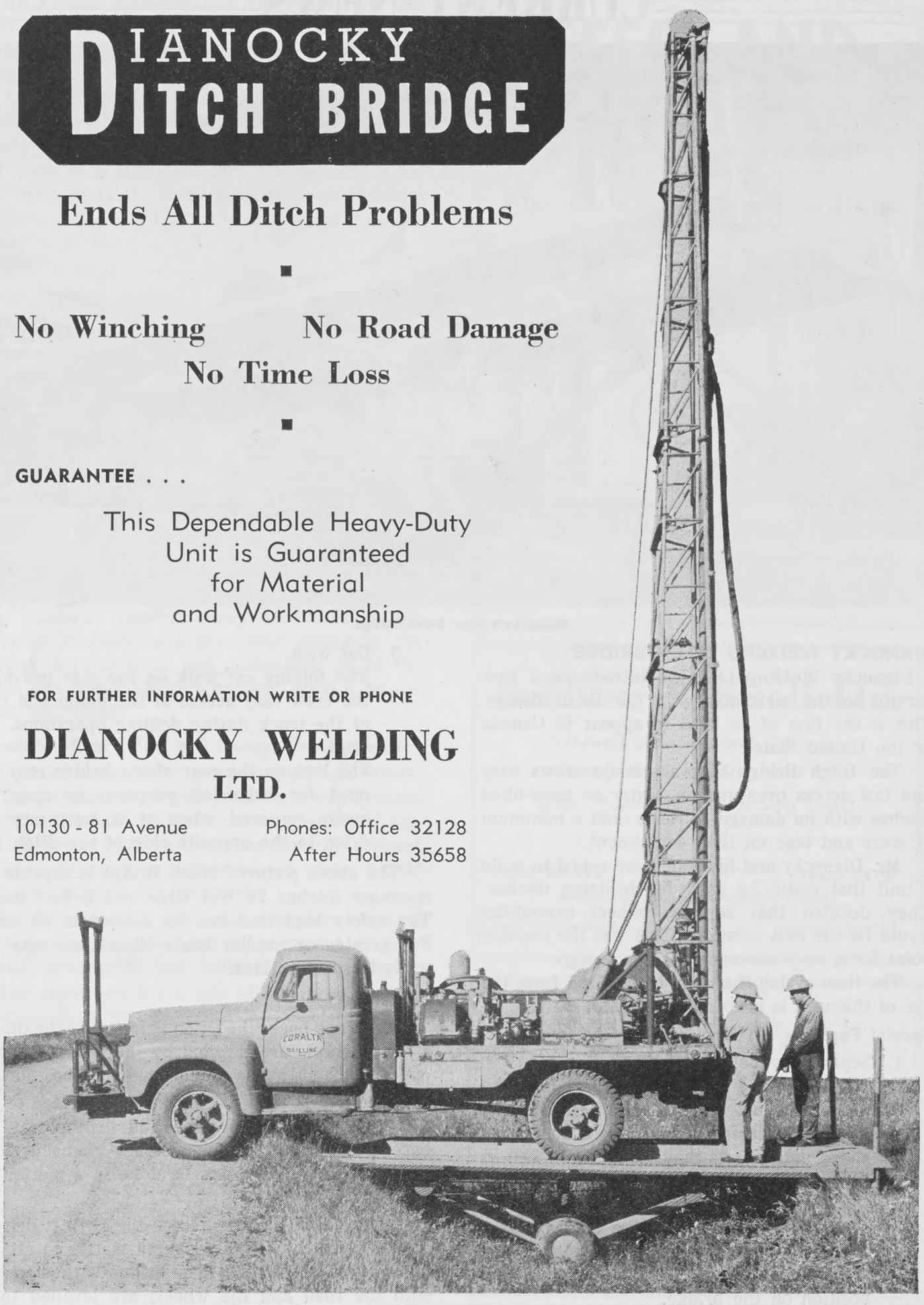
This Dependable Heavy-Duty
Unit is Guaranteed
for Material
and Workmanship

FOR FURTHER INFORMATION WRITE OR PHONE

DIANOCKY WELDING LTD.

10130 - 81 Avenue
Edmonton, Alberta

Phones: Office 32128
After Hours 35658



travelling position.

Many extra man hours are saved by seismic crews as they need no longer wait for ditches to dry before work is carried out as has been the case in the past, when many holes had to be skipped or farmers' crops damaged.

Municipalities can expect a saving on their roads, farmers relief from crop damage and the seismic companies a saving in time and abuse to their equipment.

Dominion Instruments has recently doubled its staff to provide faster service for its many oilfield customers. Specializing in repairs to seismic recording equipment, precision apparatus, viscosimeters, and survey instruments, Dominion Instruments maintains a complete line of test equipment for all oilfield instrument work.

* * *

Baldwin & Knoll Ltd. wish to announce that they have added a new T-8-S National Service rig to their well servicing line. This rig is equipped with air controls, torque converter and will do rotary work-over jobs to a depth of 7,000 feet.

Gateway Aviation Ltd. has been appointed official "Cessna Dealer" by the Cessna Aircraft Co. of Wichita, Kansas, for central and northern Alberta, and will handle all four models of Cessna aircraft.

Cessna 310

Sleek, twin-engined Business Transport Airliner. Literally years ahead in speed and design. Top speed of over 220 m.p.h. and a cruising speed of over 205 m.p.h., 1000 mile range and carries 5 people and baggage. Retractable Gear; Full Feathering Propellers.

Cessna 195

5-place, single engine businessliner with a top speed of over 180 m.p.h. An economical business airplane designed to answer executive travel.

Cessna 180

This 4-place airplane is powered with a 225 h.p. continental engine and is considered to be the world's best 4-place float plane. In all phases of flying the Cessna 180 is outstanding. With a top speed of over 165 m.p.h. and a cruising speed of 150 m.p.h., this versatile airplane is becoming very popular in Canada.

Cessna 170

The all-metal Cessna 170 is undisputably the best buy in the low price field. Together with its utility and comfort this remarkable airplane has given excellent service throughout the world. Low operating costs and low upkeep make this aircraft very attractive to the owner with moderate means.

FARMER WINS FIGHT FOR OIL LAND

The Supreme Court of Canada has thrown out claims of the Canadian Pacific Railway and Imperial Oil Ltd. to oil rights on a farmer's quarter section in Alberta with eight producing wells

valued at 1½ million to $2 million.

The case hinged on an altered certificate of title which would have deprived Anton Turta of oil rights to the property.

It all started in 1908 when Mike Podgorny bought the land from the CPR. The railway intended that the coal and petroleum rights should not be included, but the registrar in making the transfer reserved only the coal rights to the CPR.

A year later Podgorny sold the land and the rights to Turta. In 1943, before there was any talk of oil in Alberta, land titles officials came across the error and changed the title to give the CPR both coal and oil rights.

The Supreme Court today, in a 6-3 judgment, ruled that the registrar who corrected the alleged error exceeded his authority; that the alteration was not authorized by the Land Titles Act and therefore had no effect.

Believing it owned the mineral rights, the CPR leased the land to Imperial Oil in 1951. Turta, on the other hand, leased half the acreage to William Sereda and the other half to the Montreal Trust, which held it as trustees for the Edmonton law firm of Milner and Steer.

It is reported that the Milner-Steer group sold its interest to Calvan and associated companies for a substantial cash payment and stock which would be paid only if the lawsuit succeeded.

Both the Alberta Supreme Court and the Appeal Court ruled that Turta was the rightful owner of the oil. Today's decision confirms farmer Turta's 12½% gross royalty in the field.

Milner and Steer acted for the Montreal Trust and Turta, Manning and Dimos for William Sereda and Nick Turta, son of the man who started the suit.

TREASURY ENRICHED

The Alberta treasury was enriched by $11,629,486 in May, 1954, at this year's second major sale of petroleum and natural gas crown leases and reservation rights.

Although the sale fell short of the all-time record $31,675,042 earned Jan. 26 from the first major sale of 1954, it brings this year's receipts to $43,304,528, and puts Alberta on the road to a record oil revenue year.

The "red hot" Pembina oil area west of Edmonton was overshadowed by two other potentially rich producing areas—Swan Hills, about 100 miles northwest of Edmonton, and Sturgeon Lake, about 175 miles northwest.

Highest price of the sale was $1,843,500 paid by Shell Provincial Exploration Ltd., for reservation rights in the Swan Hills Region.

The second highest sum was $1,105,111, paid by Shell Oil for 320 acres in a proven production tract in the Sturgeon Lake oil-producing area.

Another parcel in the Swan Hills region drew the third highest price of the sale—$935,600, paid by Union Oil of California.

The highest bid on a petroleum and gas lease in the Pembina region was $490,123, paid by Luscar Coals Ltd. for 161 acres. Mountain Park Coals Ltd., with a bid of $475,021, paid the second highest price for a lease in the Pembina sector.

This sale involved leases on 35 acreages and six provincial parcels consisting of more than 350,000 acres. About 40 companies or exploration groups submitted tenders.

* * *

REFINERY NEWS (Imperial)

New process units in the largest and most modern oil refinery in Saskatchewan were officially opened recently when Premier T. C. Douglas pushed a button that set the equipment of Imperial Oil's enlarged refinery in motion.

Premier Douglas told the 400 guests at the ceremony that the second half of this century belongs to western Canada. "The last great treasure house of resources," he said, "are to be found in the northwestern part of this continent."

Illustrating the tremendous upsurge in the growth of western Canada and the development of natural resources, he said that oil companies had spent 169 million dollars in Saskatchewan alone in the search for oil and gas in the past four years. The rapid mechanization of the west and particularly of Saskatchewan made the availability of oil products absolutely essential.

"I am delighted that Imperial Oil is playing such an important part because Imperial grew up with Saskatchewan," he said. He referred to the original refinery which the company had built on the site of its present plant in 1915, which had a capacity of 1,500 barrels per day. At the end of the war the total refinery capacity of the province was 17,000 barrels per day. When all current expansion programs are completed at the end of this year the province will have 66,000 barrels per day of refining capacity.

This is an important milestone not only in the history of this company but in the history of the province," he said. "It speaks well for the vision and foresight of the men in the oil industry and for the future of this province."

Other speakers at the ceremony were Lieutenant Governor W. J. Patterson, and Ward O. Longworthy, superintendent of the refinery.

The reconstruction program at Regina—the first refinery built on the prairies—has taken two years to complete and cost more than $7 million. It has increased the refinery's capacity to 22,500 barrels a day. Among the new units is the largest fluid catalytic cracking unit in Saskatchewan, with a daily capacity of 7,500 barrels a day. Other new equipment includes a vacuum distillation unit, treating plants, a technical building, mechanical shops and cooling towers.

Mr. White said the new plant and equipment "represent the experience and knowledge of many people working for many years in many countries. Through our participation in one of the world's foremost petroleum development organizations, and through our own research programs, we have access to this experience and knowledge.

He said the enlarged refinery "is physical evidence of a new condition that has developed in the western plains in recent years: the establishment of large crude oil resources. Without the prairie oil there would have been no purpose in enlarging and improving facilities here."

Mr. White recalled that in the past Regina Refinery has had to process crude from Texas, 2,000 miles away and "as a result, this area became one of the highest cost areas on the continent. It is a happy thought," he said, "that those days are gone forever—or certainly for as long as may concern you and me or even our children's children. As long as the western oil resources last,and it seems clear they will last a long time—this will be a relatively favored price area. We are proud that Imperial has played quite a part in bringing this about."

Piggott Construction Ltd., announces that their company have completed Aviation Fuel Pipeline & Pumping Station at Portage la Prairie. Mr. K. Dalgleish was in charge of operations.

The company has approximately half the work completed on a bulk fuel storage and unloading station at Namao, Alberta. This project is being carried out for the R.C.A.F. Defence Construction (1951) Ltd. Mr. D. F. Meyers who is in charge of this project expects to be finished before the end of June, 1954.

NEW PROJECTS

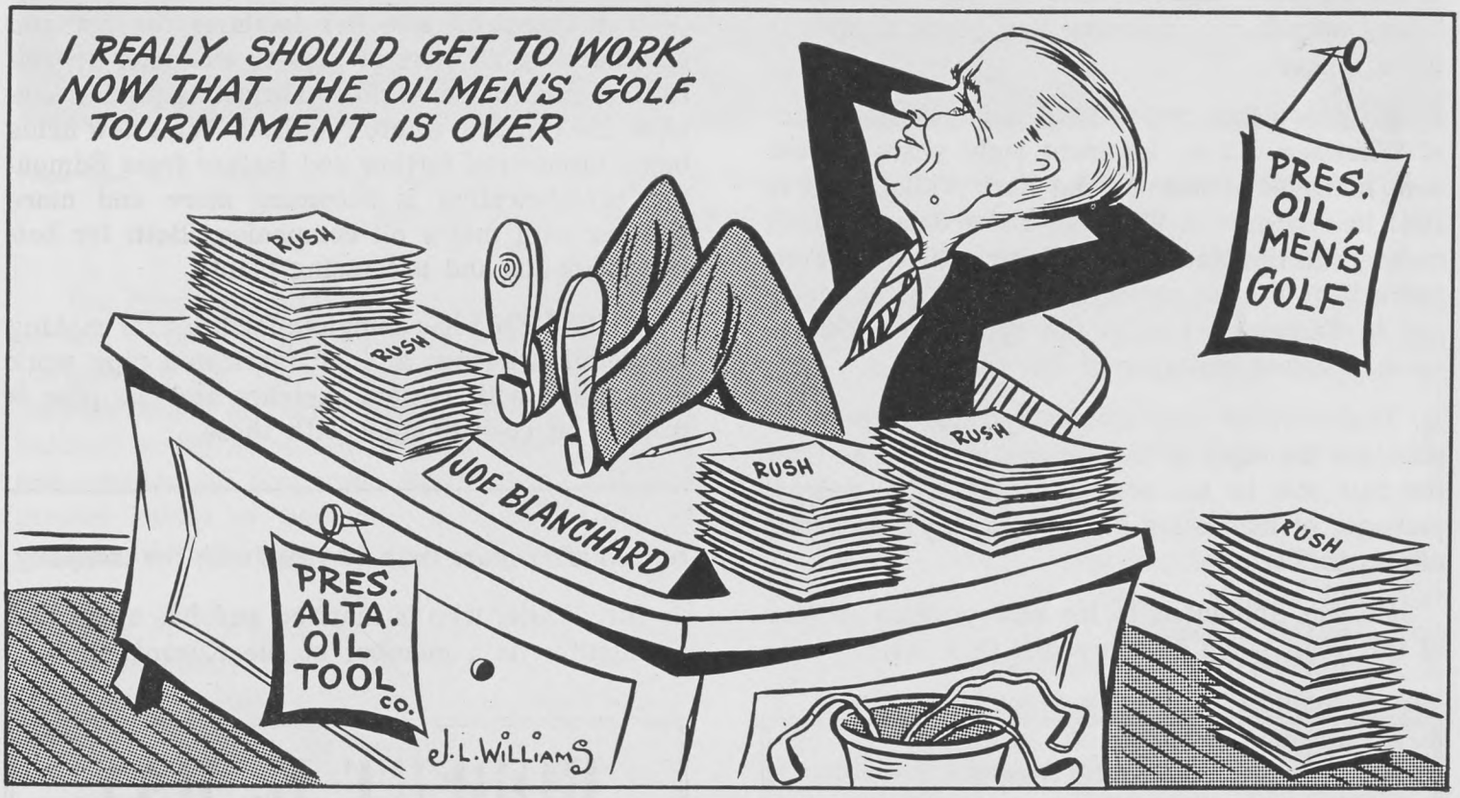
Piggott Construction Ltd. has been awarded a contract by the City of Saskatoon. The contract calls for the construction of a 30-inch main river crossing. Work on this will commence early in August, 1954, as at that time the South Saskatchewan River is normally at its lowest level. Mr. K. Dalgleish will supervise.

The company has commenced work on a 3½-mile 36" steel waterline at Buffalo Pound Lake, Sask. The work is being done for the City of Regina. Mr. R. W. Ormiston acting as project engineer expects to complete this job by July 8, 1954.

PERSONNELS by SEARCH

JIMMIE STEWART RETURNS TO CESSCO

J. W. (Jimmie) Stewart was the first man in the oilfields for Canadian Equipment Sales & Service Co. Ltd. in 1948. He came to Canada in 1948 from Consolidated Steel—having just completed a ship salvage and repair job in the Philippine Islands as Project Manager with a personnel of 100 Americans and 2,400 Philippinos. Jimmie was one of the first to organize crews to build tank battery installations in the Alberta Oil Fields. He left Cessco in 1950 to do a construction job in Korea, which the war soon stopped. He then went into business in California. The urge to return to Canada never left him and his family—last year he returned on a holiday to renew old friends. The decision was then made to make his home in Edmonton. He is back with Cessco as Production Equipment and Construction Manager. His wife Gladys and three daughters, Gwendolyn, Jacquelyn and Carolyn will join him next month.



JOE BLANCHARD

Joe Blanchard moved to Edmonton from California in 1951 and is the president of Alberta Oil Tool Co. Ltd. This is an Edmonton company which provides complete machine shop, welding and mechanical service for the drilling industry of western Canada. The recent building of a new office and additions to their original buildings provides a considerably increased capacity for the service of the oil industry.

Joe "The Bank Thief" as he is sometimes called by his many friends in the oil industry is pictured above after completing one years' service as chairman of the 2nd Annual International Oilmen's Golf Tournament. This position of chairman is a one-year proposition and will be assigned next year to one of the vice-chairmen on this years' board of directors. We are sorry that the tournament will not be over as this publication comes off the press but we're assured by Joe that he would not be the big winner and that his clubs will be in the basket beside his desk as shown.

MR. L. W. WHITE

L. W. (Lew) White, Imperial Oil's new marketing division manager in Alberta, has spent most of his 34 years with the company in western marketing operations, including five years in the Alberta division.

He joined Imperial in 1920, as assistant cashier at Winnipeg. Later, he spent eight years as resident manager at Kenora and Fort William and in 1941 he returned to Winnipeg to become a district manager in the Manitoba marketing division. Four years later he was appointed Alberta sales manager in Edmonton and in the spring of 1950 became assistant manager of the division.

That fall he was transferred to Toronto as assistant manager of the Ontario division and for the past year he has been assistant to the general manager of marketing at the company's executive offices in Toronto.

He was appointed to his new position in May of this year, when he succeeded D. J. Avison, who retired after more than 40 years with the company.

Mr. White, who is married and has a son and a daughter, is a member of the Kiwanis Club.

Now In Alberta

It is encouraging to see companies such as ALTA-BEND LTD. being formed in Western Canada for the purpose of manufacturing goods previously purchased from the U.S. and other countries.

The Company, a completely local enterprise, was formed in April of 1953 for the purpose of manufacturing seamless welding fittings, and by early 1954 production had reached marketable level.

This is the only plant in western Canada manufacturing welding fittings and their object is to eventually embrace all the range of fittings now made in this line and to be able to make special fittings on request. "Sorry, out of stock" is a common expression in western Canada and with the co-operation of the various consumers in the West ALTA-BEND hopes to eliminate this expression in the welding fittings industry and with it costly production losses.

The Company also has facilities for hot and cold bending all sizes of pipe to customer specifications, and for general prefabricating pipe assemblies and erecting where required. With new fields being discovered farther and farther from Edmonton prefabricating is becoming more and more popular with major oil companies. Both for battery hook-ups and processing plants.

ALTA-BEND has complete facilities for making up detail drawings and all fabricated pipe work is supplied with section sketches and the pipe is marked in co-ordination with these.

PIPE LINE CONTRACTORS' ASSOCIATION OF CANADA

By MR. RALPH SKINNER, Publicity Director

Front Row: G. A. Wilkinson, 1st Vice-President; E. W. Costello, President; R. K. Banister, 2nd Vice-President. Back Row: G. P. Kennedy, Director; W. Tesluck, Treasurer and Acting Secretary.

The Pipe Line Contractors Association of Canada was formed in Edmonton in April 1954. The purpose of the association was to have means through which problems common to the pipe line industry could be solved through special training and educational programs, which would promote greater safety of personnel and more efficient workmanship in pipe line operations.

Some of the ultimate aims of the association are: to maintain the standards of the pipe line contracting industry; to promote cordial and co-operative relations among pipe line contractors and the persons with whom they deal; to encourage efficiency among contractors and their employees; to seek correction of injurious, discriminatory or unfair business methods against contractors; and to eliminate, as far as possible, the occurance of injury and death to pipe line employees.

The association has had the close co-operation of the Pipe Line Contractors Association of the United States of America. Mr. Richard Gump, executive secretary of that organization, attended the first meeting in Edmonton and outlined the functions of his organization in the United States. He outlined the standards of work required by members and of some of the efforts used in improving the skill and efficiency of the trades doing pipe line work.

The contractors representing fourteen companies elected E. W. Costello, Mannix Ltd., Calgary, President; G. A. Wilkinson, Marwell Construction Co., Vancouver, First Vice-President; R. K. Banister, Fulton-Banister Ltd., Edmonton, Second Vice-President; W. Tesluck, Canadian Construction Co. Limited, Edmonton, Treasurer. Directors and Officers are, G. P. Kennedy, Missouri Valley Canadian Limited, Vancouver; R. Jernigan, Anderson International Contractors Ltd., Edmonton; C. A. Callahan, Canadian Pipe Line Construction Co. Ltd., Edmonton.

Mr. W. Tesluck is also acting executive secretary until such time as a permanent one can be appointed. Mr. Ralph Skinner is in charge of publicity and Mr. C. H. Pardee is chairman of the membership committee.

Pictured Above are the Members Present at a Recent Meeting.

MEMBERS

Anderson International Contractors Ltd.
Banister Construction Co. Ltd.
Canadian Pipe Line Construction Co.
Canadian Construction Co. Ltd.
Comstock Midwestern
C & S Pipe Line Construction Co.
Flint Rig Construction Ltd.
Fulton-Banister Ltd.
Hupp Ltd.
Mannix Ltd.
Marwell Construction Co. Ltd.
Missouri Valley Canadian Ltd.
Piggot Construction Alberta Ltd.

Associate Members

Canadian Equipment Sales & Service Co. Ltd.
Crose-Curran Ltd.

Special Members

Campbell, McLeod & Campbell Ltd.

FIRST IN CANADA'S OIL FIELDS

By THE ROYAL BANK OF CANADA

Some seven years ago, when the discovery of new oil and gas reserves in Western Canada first caught the attention of the world, The Royal Bank of Canada began laying the foundations for what has since grown into a comprehensive oil and natural gas organization.

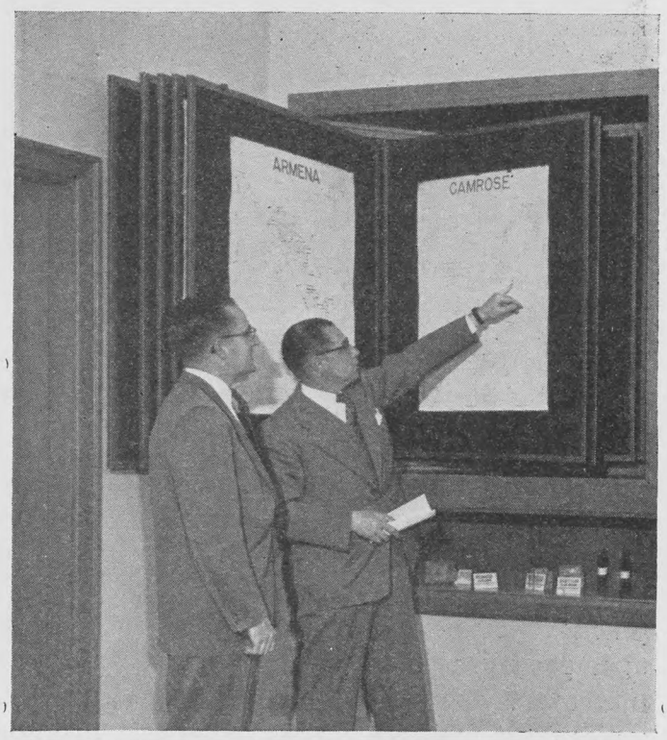
As a matter of fact, financing the oil and gas business was not something completely new for the bank, for since 1928 it had been operating a branch at Turner Valley, Alberta, site of one of the first major strikes in Canada. This branch is still giving service to oil men in that area.

But it was the strike at Leduc back in February, 1947, that really gave impetus to the bank's remarkable growth in the oil and gas field. The day after the first producing well was completed, it established a Leduc Branch. There wasn't a suitable site available at the time, so for a while the branch conducted business in the town's Council Chamber. Whenever a council meeting was being held, the staff would close up their books and go out!

T. H. Atkinson, Vice-President and General Manager of The Royal Bank of Canada, photographed with a driller at a well near Edmonton.

A little more than a year later, in May, 1949, branches were opened in Devon and Redwater. Only recently, branches were opened to serve the new Pembina Field at Drayton Valley and at Evansburg. With this close identification with the oil fields, then, it is small wonder that the Royal has become widely known throughout North America as Canada's "Oil" bank.

From 1947 onwards, the demands of the industry increased so rapidly and to such an extent that eventually it led to the creation of a special Oil and Gas department by the bank, located at Calgary. In this department, oil and banking are brought onto common ground through a group of "oil-bankers"—officers trained in the special techniques and procedures essential to the financing of the industry. These bank officers work in close co-operation with oil and gas men, and with senior officers in the bank's many branches throughout the oil and gas fields and in the principal branches in centres like Calgary and Edmonton.

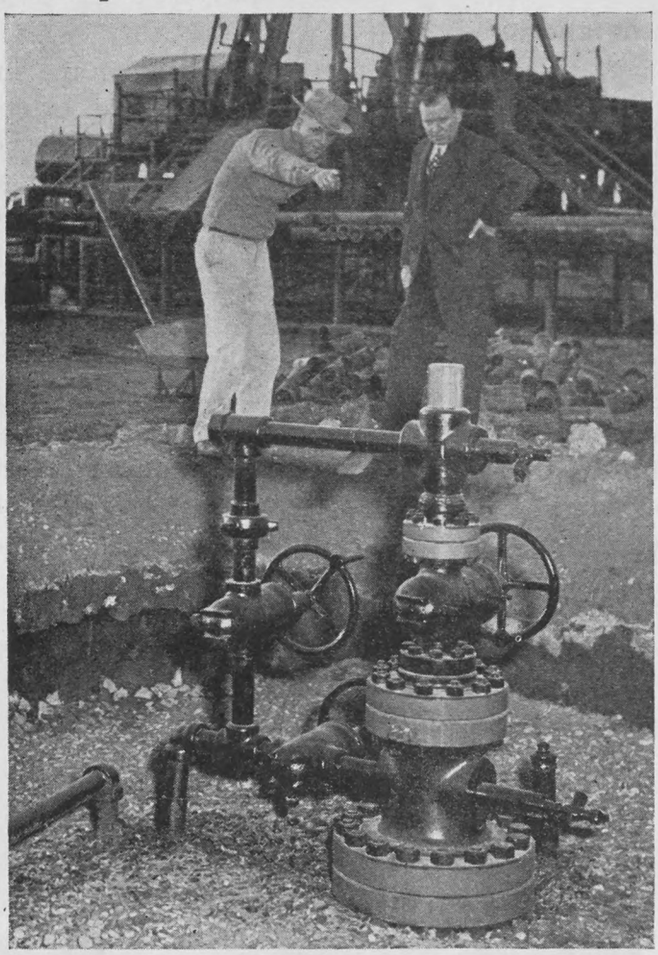


J. C. Mayne (right), Supervisor of The Royal Bank of Canada's Alberta branches, confers with A. D. Insley, Manager of the bank's Oil and Gas Department at Calgary.

The main function of the Royal's Oil and Gas Department is to provide information, guidance and practical assistance to the industry—in particular to new entrants to the field. A number of special problems face newcomers, for conditions in Canada differ in several respects from their counterparts in other parts of the world.

Officers of the bank's oil and gas organization have to be well versed in government and other regulations concerning oil and natural gas. Frequent trips into the field are an essential part of their routine so that they can keep themselves

well informed on the latest developments from on-the-spot sources.



F. J. C. Caine (right), Manager of The Royal Bank of Canada's Edmonton Branch, during a visit to a well-head 'Christmas Tree'.

Last year, the bank's Oil and Gas department introduced a welcome new feature in the form of a Special Bulletin Service for the oil and gas industry. This service provides, in a convenient, practical form, current information on a number of important aspects of the industry. Each bulletin covers one specific subject and among the topics dealt with are Conservation and Proration, Royalty Payments, Oil Financing, Lease Regulations and Provincial Regulations. Bulletins are kept up-to-date in order to make the most current informaiton readily available.

The Royal Bank is of the opinion that a Bulletin Service has many advantages over a printed manual or booklet attempting to cover the whole field. Sooner or later the latter becomes "dated", whereas the flexibility of a Bulletin Service allows each bulletin to be revised quickly and reprinted whenever occasion demands. **The bank supplies the bulletins in a convenient file folder, and does not charge for the service.**

Not long ago the bank published a 20-page illustrated booklet entitled "Serving Canada's Oil and Gas Industry" which describes in some detail the services it offers to oil and gas men. The bank's role in financing, the Oil and Gas Department, the Bulletin Service and other fcailities of value to the industry are some of the subjects discussed. It also has a large-scale map of Canadian oil and gas fields, showing active areas, areas under exploration, existing and proposed pipelines, and locations of the bank's branches.

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PIPE LINE DITCHING

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- Well and Battery
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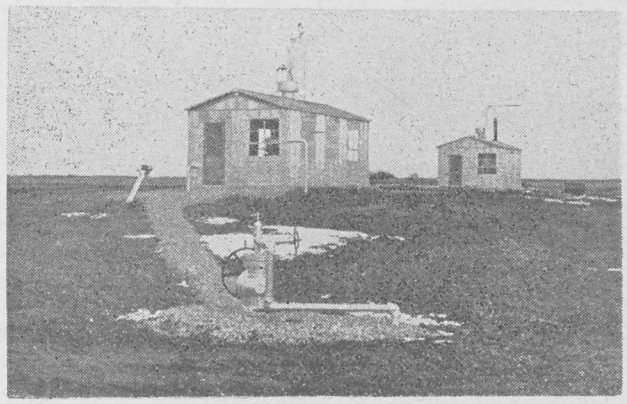

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